Forecasts for 2002 and for 2010 by I-O data in 1995 and in 1996

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1. Introduction

During these three years, we are accustomed to take into considerations both the causes and the factors of which the fairly rapid slowdown in the rates of growth and in the productivity has appeared in the Japanese economy since 1992 and we have concluded that our economy has lost her strong vitalities and her sound potentialities of adjustments to the development of the international economies from 1992(1).

In adition to the rather poor economic performances of our economy, the Hokaidô Takushoku Bank, one of the important commercial banks among eleven biggest commercial banks, has been in bankruptcy in September 1997 and, in November 1997, the Yamaichi Securities Corporation, the second large-scale securities firm in Japan, has also shutdown with some semi-first class securities-companies, therefore, at the end of the last year and at the beginning of this year, there have been expanded some pessimistic perspectives for our economy of financial crisis and of interlocking insolvencies of both industrial and financial firms and, therefore, the Japanese government has determined the emergency financial policies of 30 trillion yen which were designed to survive a run on a bank.

We have succeeded in refraining from serious financial crisis and interlocking bankruptcies of industrial and financial institutions by the emergency financial policies of 30 trillion yen, however, almost all economic indicators have shown rather abrupt declines, for example, the rates of growth in real GDP have represented all negative signs in 4th quarter 1997, in the first and the second quarters 1998. These continuous there negative rates of growth from the fourth quarter in 1997 to the

second quarters in 1998 are the most serious economic events which we have experienced for the first time during more than half century from the end of the Second World War[2]. Therefore, we could conclude that the depression process of our economy has much accelerated from the end of the last year and, furthermore, the depression spiral processes have begun.

In these emergency circumstances of the depression spiral processes of our economy, we have to concentrate the analysis to find out the way for recovery by neglecting all other economic problems as soon as possible.

In order to explain very briefly the factors which have caused rather rapid slowdown in the rates of growth, we should like to represent the following three points:

(1) very large-scale fluctuations of the yen-dollar exchange-rates from 79.75 yen in April 1995 to 147 yen in June 1998[3].

(2) problems of uninformed credits belonging to the Japanese financial institutions which are amounted to more than 80 trillion yen and must be resolved by the financial institutions themselves, or by the subsidies of government before the period from 1992 to 1998, but could not carry out final solutions even at present[4].

(3) the inevitable necessity of structural reforms which many Japanese economists have already indicated in a large number of books, articles and television broadcastings[5].

As a synthetic theoretical model which contains the points, (1), (2) and (3), we are going to examine in great details the article, "La concurrence sociale va-t-elle remplacer la concurrence par les taux de change?; (Will Social Dumping Replace Competition Through Exchange Rates?), by a French economist, Patrick Artus[6], and other empirical results by an American economist, Bruce Blonigen[7], in the second section of this paper and at the end of the same section, we have shown a comparison of the I-O analysis of 42 sectors between the Japan and the France[8].

In the third section, we should like to show the short-term forecast for 2002 by the I-O data in 1996[9] and the long-term forecast for 2010 by the I-O data in 1995[10][11]. At the end of the paper, in the fourth section, we intend to indicate our conclusion[12].

Note

(1) Sadao SUWA, Waseda Economic Papers, No. 34, 1995, No35, 1996, No. 36, 1997

(2) Nippon Keizai Newspaper, 12, September 1998

(3) S. SUWA, op. cit. pp. 1−2

(4) Iwao Nakatani, "Historical Conversion of the Japanese Economy", Oriental Economist Publishing, 1996

Ryutaro Komiya, Masataka Sase & Masaru Etô, "The Japanse Economy Fowards the 21 st Century", Oriental Economist Publishing, 1997

(5) I. Nakatani, op. cit., pp200−290. R. Komiya & others, op. cit., pp. 1−20, 119−221

(6) Patrick Artus, "La concurrence sociale va-t-elle remplacer la concurrence par les taux de change?", Annales d'economie et de statistique, No.48, octobre/decembre, 1997, pp. 83 −100

(7) Bruce Blonigen, "Firm-Specific Assets and the Link Between Exchange Rates and Foreign Direct Investment," The American Economic Review, June 1997, pp. 447−465

(8) Nikkei Data, Needs-I·O, JPFR85NP86 & JPFR85@86 & 43, 1998 Manual, Needs, International I-O Table, 1995, Needs-I·O, 1996, Needs-I·O, 1997. Manual, Needs, 1998

(9) The Oriental Economist Publishing, Economate I-O, 1993. Economate I-O: Win 95 version, 1998.

(10) Economate I-O: Win 95 version 1998.

(11) The Oriental Economist Publishing, "The exchange-rates & the rates of interest", CD-ROM for Window95, 1998.

(12) Ronald McKinnon and Kenichi Ohno, "Dollar and Yen," MIT Press, 1997, the Japanese Translation, the Nihon Keizai Newspaper, 1998. Eisuke Sakakibara, edits., "Economic and Social System in Japan, the U.S. and the Europe," Oriental Economist Publishing, 1995.

2. A model on the international competitivity and a comparison by I-O in 1985 between the Japan and the France

the model

Mr. Patrick Artus has constructed the following model in which the instrument of economic policy are only the supplies of money and the rates of contributions of the social securities in the two countries, in order to study a game-situation between the both nations(1).

For the productions:

$$\begin{cases} y = \alpha\,(e + p^* - p) \\ y^* = \alpha\,(p - e - p^*) \end{cases} \tag{1}$$

where y is the logarithm of the production, e the exchange-rate, p the level of price and a mark, *, indicates the variables of the second country. The productions depend on the competitivity.

The price level in each country would increase with the quantity of money supplies and with the level of social protection.

$$\begin{cases} p = m + \tau + \Pi \\ p^* = m^* + \tau^* + \Pi^* \end{cases} \tag{2}$$

Π and Π^* represent the structural inflations in the two countries.

A decline of the level of social protection would stimulate the supply of good and make the prices fall. ($\Delta\tau<0$); τ show the level of protection. The exchange -rate would vary with the difference between the money supplies.

$$e=\beta(m-m^*) \tag{3}$$

If $\beta=1$, there is no nominal rigidity and the production does not depend on monetary policies. If $\beta>1$, in the case of which is supposed here, there is a certain degree of nominal rigidity and a monetary expansion would stimulate the production. This is the only one case that there could exist an arbitrage between protection and exchange-rate policy.

The loss-function of the authorities would be written in the following way:

$$L=(\bar{y}-y)^2+\theta p^2+\mu(\bar{\tau}-\tau)^2 \tag{4}$$

where $\bar{y}$ is the logarithm of the full employment production and $\bar{\tau}$ is the socially desired level of social protection. This last term represents the social cost of the recoil of the social protection and of the decline of the minimum wage.

By resolving (1), (2) and (3), the next expression, (5) would be obtained:

$$y=\alpha(\beta-1)(m-m^*)-\alpha(\tau-\tau^*)-\alpha(\Pi-\Pi^*) \quad (\beta>1) \tag{5}$$

and the synthetic equation in the second country[2].

Equilibrium in the flexible exchange-rates; Global non cooperative equilibrium

It is suppossed here that the authorities of two countries would choose their monetary policy and their policy of protection at the same time in non cooperative way. In the equilibrium of Nash, the next equations are obtained[3].

$$\begin{cases} \tau=\bar{\tau}-\dfrac{\alpha/\beta}{\mu}\bar{y}=\tau^* \\ m=-\bar{\tau}-\Pi+\dfrac{\alpha\beta}{\mu}\bar{y}+\dfrac{\alpha(\beta-1)}{\theta}=m^* \end{cases} \tag{6}$$

from where,

$$\begin{cases} y=y^*=0 \\ P=p^*=\dfrac{\alpha(\beta-1)}{\theta}\bar{y} \end{cases} \tag{7}$$

Limited cooperation in the social protection

It is assumed here that both countries would agree to have the same protection ex-ante; $\tau=\bar{\tau}^*$, but would not cooperate their monetary policies each other. In the

equilibrium of Nash, the monetary policies(which minimise$(\bar{y}-y)^2+\theta p^2$) are given by:

$$m=-\tau-\Pi+\frac{\alpha(\beta-1)}{\theta}\bar{y}=m^* \tag{8}$$

where τ is the rate of common protection precedingly chosen. This rate is chosen to minimize $\theta p^2+\mu(\bar{\tau}-\tau)^2$, that is:

$$\tau(\theta+\mu)=\mu\bar{\tau}-\theta(m+\Pi) \tag{9}$$

By resolving (8) and (9), the following equation would be obtained:

$$\begin{cases} m=-\bar{\tau}-\Pi+\alpha\dfrac{\theta+\mu}{\theta}\dfrac{\beta-1}{\mu}\bar{y} \\ \tau=\bar{\tau}-\dfrac{\alpha(\beta-1)\bar{y}}{\mu} \end{cases} \tag{10}$$

The cooperation on the protection would limit the sterilised monetary competition. Finally we have:

$$\begin{cases} y=y^*=0 \\ p=p^*=\dfrac{\alpha(\beta-1)}{\theta}\bar{y} \end{cases} \tag{11}$$

The inflation is the same: the monetary expansion is smaller, but it is compensated by smaller decline of the protection[4]

Equilibrium in the asymmetrical fixed exchange-rates

It is assumed now that the exchange-rates are fixed with asymmetry: the second country has to assure that $e=0$ by choosing $m=m^*$. The first country (the leader in the agreement of the fixed exchange-rates) chooses freely her money supply. She knows that there are the fixed exchange-rates, therefore that $m=m^*$, would take it in consideration in her choices. It continues to assume the symmetrical hypothesis of two countries[5] ($\bar{y}=\bar{y}^*$; $\Pi=\Pi^*$)

Non coordinated social protection

The first country would choose m and τ to minimize:

$$L=(\bar{y}+\alpha(\tau-\tau^*))^2+\theta(m+\tau+\Pi)^2+\mu(\bar{\tau}-\tau)^2 \tag{12}$$

The second country would choose τ^* to minimize:

$$L^*=(\bar{y}+\alpha(\tau^*-\tau))^2+\theta(m+\tau^*+\Pi)^2+\mu(\bar{\tau}-\tau^*)^2 \tag{13}$$

In the equilibrium of Nash, we have:

$$\begin{cases} \tau = \bar{\tau} - \dfrac{\alpha \bar{y}}{\mu} = \tau^* \\ m = -\bar{\tau} - \Pi + \dfrac{\alpha \bar{y}}{\mu}; \quad p = p^* = 0 \end{cases}$$

The money supply would intervene only in the price, because the production depends on $m - m^* = 0$[6].

Coordinated social protection

The same rate of social protection ($\tau = \tau^*$) is chosen before that the money supply ($m = m^*$) would not be chosen. In this case, the rate of social protection is given by (9). The money supply is such, afterward, as ($p = 0$ $(m + \tau + \Pi) = 0$). Finally, the next equations (15), are obtained[7].

$$\begin{cases} \tau = \tau^* = \bar{\tau} \\ m = -\tau - \Pi; \quad P = P^* = 0 \end{cases} \tag{15}$$

Asymmetry between nations

In this analysis, it has been assumed that the both countries were totally symmetric. For simplicity, the next equation (16) is going to be defined:

$$p = m + \Pi \tag{16}$$

The rate of production affects uniquely the competitivity, but not the level of prices[8].

Asymmetry on the needs of growth

Flexible exchange-rate

Each country tries to minimize her loss function with the money supply and the rate of social protection as instruments. The author is going to synthesize the results by regarding the differences between the monetary and social policy carried out by the both countries, which are representative of the degree of competition between these countries. These differences depend on the excess of necessity of growth in the second country $\bar{y}^* - \bar{y}$.

The next equation, (17) is obtained.

$$\begin{cases} (m^* - m)\left[2\alpha^2(\beta - 1)^2 + \theta + 2\alpha^2 \dfrac{\theta}{\mu}\right] = \alpha(\beta - 1)(\bar{y}^* - \bar{y}) \quad (\beta > 0) \\ (\tau^* - \tau)\left[2\alpha^2(\beta - 1)^2 + \theta + 2\alpha^2 \dfrac{2\theta}{\mu}\right] = -\dfrac{\theta\alpha}{\mu}(\bar{y}^* - \bar{y}) \quad (\bar{y}^* > \bar{y}) \end{cases} \tag{17}$$

As it were previsonal, the second country, which is necessary to grow more than before, would carry out more expansionary monetary policy, and to reduce her

social protection in proportion to the first country. ($\gamma^* < \gamma$)
If θ is very large, the difference of monetary policy would disappear, because the nations would not like the inflation. If μ is very large, the difference of social policy would disappear, because $\tau = \tau^* = \bar{\tau}$ in two countries.

The absolute level of social protection is also identified.

That is[9]:

$$\begin{cases} \tau = \bar{\tau} - \dfrac{\alpha \bar{y}}{\mu} - \dfrac{\alpha}{\mu} \dfrac{(\bar{y}^* - y)\left[\alpha^2(\beta-1)^2 + \dfrac{\alpha^2\theta}{\mu}\right]}{2\alpha^2(\beta-1)^2 + \theta + \dfrac{2\alpha^2\theta}{\mu}} \\ \tau^* = \bar{\tau} - \dfrac{\alpha \bar{y}^*}{\mu} + \dfrac{\dfrac{\alpha}{\mu}(\bar{y}^* - \bar{y})\left[\alpha^2(\beta-1)^2 + \dfrac{\alpha^2\theta}{\mu}\right]}{2\alpha^2(\beta-1)^2 + \theta + \dfrac{2\alpha^2\theta}{\mu}} \end{cases} \tag{18}$$

Asymmetric fixed exchange-rate

The first country knows that $m^* = m$, therefore, that the choice of the money supply will not be able to change the production. The first country would choose, then, her monetary policy to cancel her inflation, from where:

$$m = -\Pi \tag{19}$$

She chooses her degree of social protection to minimize $(\bar{y} - y)^2 + \mu(\bar{\tau} - \tau)^2$ by knowing that the second country has to choose $m^* = m$; the second country minimizes $(\bar{y}^* - y^*)^2 + \mu(\bar{\tau}^* - \tau^*)^2$ in being obliged to choose $m = m^*$, from where

$$\tau^* - \tau = \frac{-\alpha(\bar{y}^* - \bar{y})}{2\alpha^2 + \mu} \tag{20}$$

from where, also:

$$\begin{cases} \tau = \bar{\tau} - \dfrac{\alpha \bar{y}}{\mu} - \dfrac{\alpha}{\mu}(\bar{y}^* - \bar{y}) \dfrac{\alpha^2}{2\alpha^2 + \mu} \\ \bar{\tau}^* = \bar{\tau} - \dfrac{\alpha \bar{y}^*}{\mu} + \dfrac{\alpha}{\mu}(\bar{y}^* - \bar{y}) \dfrac{\sigma^2}{2\sigma^2 + \mu} \end{cases} \tag{21}$$

and the next expression (22) is obtained

$$\begin{cases} \dfrac{\alpha}{2\alpha^2 + \mu} > \dfrac{\alpha\theta}{2\alpha^2(\beta-1)^2\mu + \theta\mu + 2\alpha^2\theta}; \\ \dfrac{\alpha}{2\alpha^2 + \mu} < \dfrac{\alpha^2(\beta-1)^2 + \dfrac{\alpha^2\theta}{\mu}}{2\alpha^2(\beta-1) + \theta + \dfrac{2\alpha^2\theta}{\mu}} \end{cases} \tag{22}$$

It is seen that in the asymmetric fixed exchange-rates, the difference between

τ^* and τ is larger than in the flexible exchange-rates[10].

Asymmetry on the base-inflation
Flexible exchange-rates

It would be assumed, here, that $\Pi^* > \Pi$ in the second country, the base-inflation is higher than in the first country.
Therefore, the next equation, (23) are obtained:

$$\begin{cases} y=\alpha(\beta-1)(m-m^*)+\alpha(\Pi^*-\Pi)-\alpha(\tau-\tau^*) & (\beta>1) \\ y^*=\alpha(\beta-1)(m^*-m)-\alpha(\Pi^*-\Pi)-\alpha(\tau^*-\tau) \\ p=m+\Pi,\ p^*=m^*+\Pi^* \end{cases} \tag{23}$$

The production of each country would increase with the excess of money supply over that of the other country, decrease with the excess of the base-inflation and the excess of social protection.

In the equilibrium of Nash, the following equation, (24), are obtained:

$$\begin{cases} (\tau-\tau^*)(2\alpha^2+\mu+\dfrac{2\alpha^2\mu(\beta-1)^2}{\theta})=2\alpha^2\beta(\Pi^*-\Pi) \\ (m-m^*)(2\alpha^2+\mu+\dfrac{2\alpha^2\mu(\beta-1)^2}{\theta}) \\ \qquad =(2\alpha^2+\mu-2\alpha^2(\beta-1)\dfrac{\mu}{\theta}(\Pi^*-\Pi) \end{cases} \tag{24}$$

Without ambiguity, $\tau^* < \tau$ (because $\Pi^* > \Pi$): the second country tries to maintain her production in compensating the excess of the base-inflation by a poorer social protection[11].

Asymmetric fixed exchange-rate

In this configuration, the following equations, (25) and (26) are obtained:

$$\begin{cases} m=-\Pi \\ (\tau-\tau^*)(2\alpha^2+\mu)=2\alpha^2(\Pi^*-\Pi) \end{cases} \tag{25}$$

We see that:

$$\frac{2\alpha^2}{2\alpha^2+\mu} > 2\alpha^2+\mu+\frac{2\alpha^2\mu(\beta-1)^2}{\theta}$$

if,

$$\frac{2\alpha^2\mu(\beta-1)}{\theta}>2\alpha^2+\mu \text{ (12)} \tag{26}$$

Domestic nominal rigidity

The auther is going to, here, find out again the expansionary effect of the monetary policy in the fixed exchange-rates. We has represented the next expressions, (27), (28) and (29) for this purpose:

$$y=\alpha(e+p^*-p)+\gamma(m-p)-\alpha(\tau-\tau^*) \tag{27}$$

with a real balance effect (and the symmetric effect of y^*)

$$\begin{cases} e=m-m^* \\ p=\beta(m+\Pi) \quad \beta<1 \end{cases} \tag{28}$$

The fact that p has under-reacted to the money supply shows the internal nominal rigidity. Finally:

$$\begin{cases} y=\alpha(1-\beta)(m-m^*)+\alpha\beta(\Pi^*-\Pi)-\alpha(\tau-\tau^*) \\ \quad +\gamma(1-\beta)m-\gamma\beta\Pi \end{cases} \tag{29}$$

The production would increase with the difference of money supply and the level of money supply, decrease with the base-inflation (Π), the social protctons (τ) and the level of the base-inflation(13).

Asymmetry between the objectives of production

In the flexible exchange-rates, the next equation, (30), is obtained:(14)

$$(\tau^*-\tau)\left[(2\alpha^2+\mu)+\frac{\mu(\alpha+\gamma)(2\alpha+\gamma)(1-\beta)^2}{\theta\beta^2}\right]=-\alpha(\bar{y}^*-\bar{y}) \tag{30}$$

In the asymmetric fixed exchange-rates

$$(\tau^*-\tau)(2\alpha^2+\mu)=-\alpha(\bar{y}-\bar{y}^*) \tag{31}$$

It is seen that the difference between the rates of social protection in the fixed exchange-rates is such large as the same difference in the flexible exchange-rates is such large as the same difference in the flexible exchange-rates that $\gamma(1-\beta)$ is large, in other words, that the effect of the money supply (in the level, not only in difference with that of the other country) is large(15).

In the monetary union, the difference, $\tau^*-\tau$, is the same as in the fixed ex-

change-rates, because it depends on the difference $\bar{y}^*-\bar{y}$ and on the difference beween the monetary supplies, which is null in the fixed exchange-rates as well as in the monetary union.

The money supplies are, however, different; in the fixed exchange-rates:

$$\begin{aligned}\{m(\gamma^2(1-\beta)^2+\theta\beta^2)&=\gamma(1-\beta)\bar{y}+\frac{\alpha^2\gamma(1-\beta)}{2\alpha^2+\mu}(\bar{y}^*-\bar{y})\\&+(\gamma^2\beta(1-\beta)-\theta\beta^2)\Pi\end{aligned} \tag{32}$$

in the monetary union:

$$m(\gamma^2(1-\beta)^2+\theta\beta^2)=\gamma(1-\beta)\frac{\bar{y}+\bar{y}^*}{2}+(\gamma^2\beta(1-\beta)-\theta\beta^2) \tag{33}$$

As soon as $\mu>0$, it would be: $m_{\text{union}}>m_{\text{fixed exchange}}$, because in the monetary union, the supply of common money takes into account the necessity of production in the second country, and that in the asymmetric fixed exchange-rates, owing to the management cost of the social protection, μ, the imperfect choice of the money by the only first country would not be able to be completely corrected by the difference $\tau^*-\tau$.

In two cases, there would be:

$$\mu(\bar{\tau}-\tau^*)=\alpha(\bar{y}^*+\alpha(\tau^*-\tau)-\gamma(1-\beta)m+\gamma\beta\Pi) \tag{34}$$

Since in the monetary union the money supply is stronger, the necessity of correction by the decline of the protection would be reduced: $\tau^*_{\text{union}}>\tau^*_{\text{asymmetric fixed exchange}}$[16].

Asymmetry between the objectives of inflation

In the flexible exchange-rates: the next equation,

$$\tau^*-\tau=-(\Pi^*-\Pi)\frac{\theta\beta^2\alpha(2\alpha+\gamma)}{\theta\beta^2(2\alpha^2+\mu)+(1-\beta^2)\mu(\alpha+\gamma)(2\alpha+\gamma)} \tag{34}$$

In the asymmetric fixed exchange-retes:

$$\tau^*-\tau=-(\Pi^*-\Pi)\frac{\alpha\beta(2\alpha+\gamma)}{2\alpha^2+\mu} \tag{35}$$

The reaction(difference $\tau-\tau^*$) in the fixed exchange-rates in stronger if:

$$\theta\beta(2\alpha^2+\mu)<(1-\beta)\mu(\alpha+\gamma)(2\alpha+\gamma) \tag{36}$$

if θ is large, or, μ is small (the inflation is penalized), the social protection is utilized to obtain the objective of production. In this case, in the flexible exchange-rates, $m=-\Pi$ and $m^*=-\Pi^*$, in the fixed exchange-rates, $m=-\Pi=m^*$[17].

The money supply would be larger in the case of the monetary union, if[18]:

$$\gamma^2(1-\beta)>\theta\beta \tag{37}$$

The model by P. Artus which is explained in great detail from the equation (1) to the equation (37) has been designed, of course, to analyse the relation between two countries within the E. U.[19], however, we could also find out a great deal of very significant suggestions to clarify the Japan's relationships mainly with the United States and with both the Asian and the European countries. In order to represent the Japan's relationships with the foreign countries, the exchange-rates, e, is the very important variable which must be stabilized, or decrease the large-scale fluctuations from 1992 to 1998. If we had succeeded in stabilizing the yen/dollar exchange-rates within the range from positive 15% to negative 15% just like the EEM, all three factors of the depression spiral processes in our economy shown in the introduction would have changed very much. As for the second point on the uninformed credits of more than 80 trillion yen, the variables, y, $\bar{y}$, m, τ[20], $\bar{\tau}$[21], p, Π[22] and all other variables and parameters are profoundly concerned. In relation to the third point, the structural reforms of our economy, the variable Π[23], both all other variables and parameters would have been taken in consideration. So we should like to conclude that one of the ways for the recovery of our economy is to show some plausible scenarios of our future economy by rather simple clear model like that by P. Artus which is suitable for our present conditions and our political leaders should explain clearly the future course of the economy to eliminate phychological shrinks and pessimism among the general public. This is the reason why we have examined the model by P. Artus in detail, owing to the complete impossibility of the formulation of a suitable model for our economy.

Instead of the construction of a suitable model., we are going to show other empirical evidences which would indicate clear and large effects of the fluctuations of yen-dollar exchange-rates on our economic behaviour, foreign direct investment, by Bruce A. Blonigen and to represent some future scenarios by assuming the rates of growth in final demands, in other words, the forecast for 2002 by I-O (60 sectors) and the forecast for 2010 by I-O (177 sectors).

In order to show clear influences of the real exchange-rate and of the rates of growth in Japan's real GDP on Japanese acquisitions in the U. S. (on the economic behaviour), we should show only simple empirical evidences by B. A. Blonigen[24] to

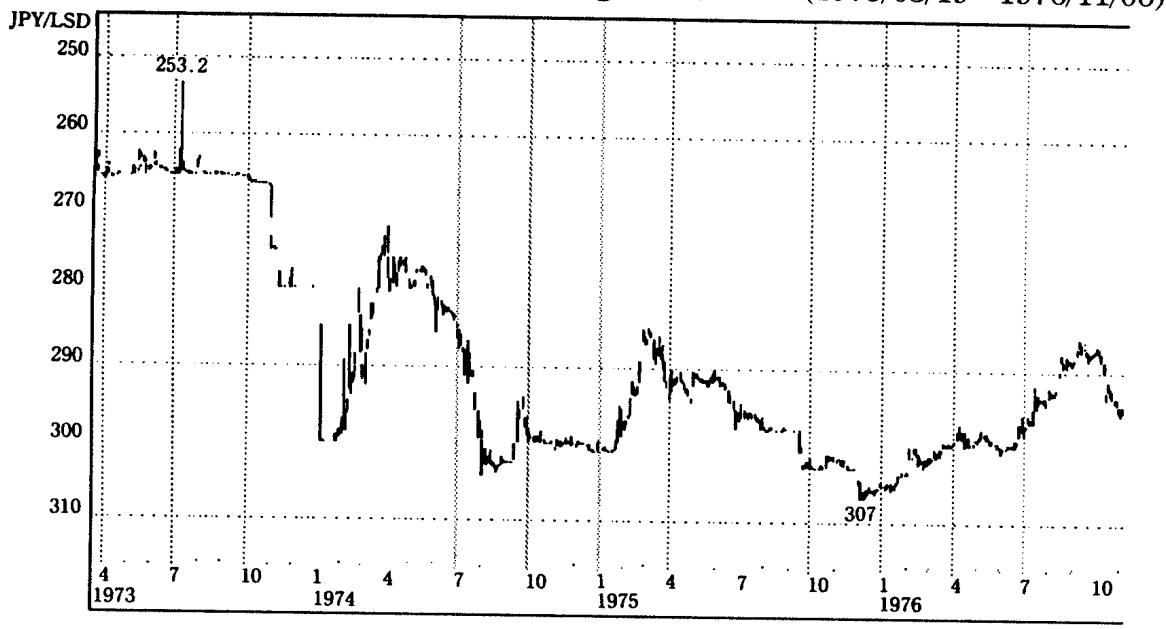
give some complimentary interpretations of the model by P. Artus. The estimated results[25] that almost all parameters, except nonmanufacturing, are significant are enough to represent clear influences.

	Dependent variable: Japanese acquisitions in the U.S. 1975–1992					
	All industries		Nonmanufacturing		Manufacturing	
Variables	Negative binomial	Random NEGBIN	Negative binomial	Random NEGBIN	Negative binomial	Random NEGBIN
Constant	−6.948*** (0.328)	−4.559*** (0.346)	−7.252*** (0.562)	−4.718*** (0.642)	−6.431*** (0.425)	−3.272*** (0.758)
Real exchange rate	0.219** (0.570)	0.851* (0.480)	0.382 (1.124)	0.385 (0.802)	2.292*** (0.692)	1.548** (0.657)
Domestic acquisitions	0.068*** (0.008)	0.017*** (0.002)	0.059*** (0.018)	0.009* (0.006)	0.079*** (0.009)	0.042*** (0.008)
Industry value-added share	1.086*** (0.196)	2.334*** (0.397)	0.737 (0.449)	1.235* (0.736)	0.316*** (0.046)	0.526*** (0.117)
Japan real GDP growth	0.174*** (0.046)	0.140*** (0.039)	0.236*** (0.073)	0.200** (0.088)	0.120* (0.067)	0.129*** (0.046)
Japan stock market	0.779*** (0.292)	0.900*** (0.283)	0.719 (0.535)	0.534 (0.542)	0.785* (0.415)	0.761** (0.307)
U. S. protection	0.159 (0.332)	0.688 (0.519)	−0.807 (10.801)	0.124 (13.339)	−0.230 (0.227)	−0.180 (0.281)
Alpha		4.592*** (0.311)		11.381*** (1.096)		1.182*** (0.213)
a		4.333*** (0.67)		3.753*** (0.778)		18.762 (12.180)
b		0.458*** (0.057)		0.390*** (0.067)		1.009*** (0.249)
Log-Likelihood (LogL)	−1900.9	−1676.5	−871.5	−754.4	−949.7	−894.4
Restricted LogL*	−3020.1	−2441.3	−1501.2	−1237.1	−1464.3	−1204.2
Likelihood ratio test*	2238.4	1529.6	1259.4	965.8	1029.2	619.6
Observations	6498	6498	3978	3978	2520	2520

In the next stage, we would show only daily data[26] of the yen/dollar rates and make a comparison of industrial structures between, the Japan and the France[27] in 1985.

Exchange-rates, Tokyo market (yen/dollar)

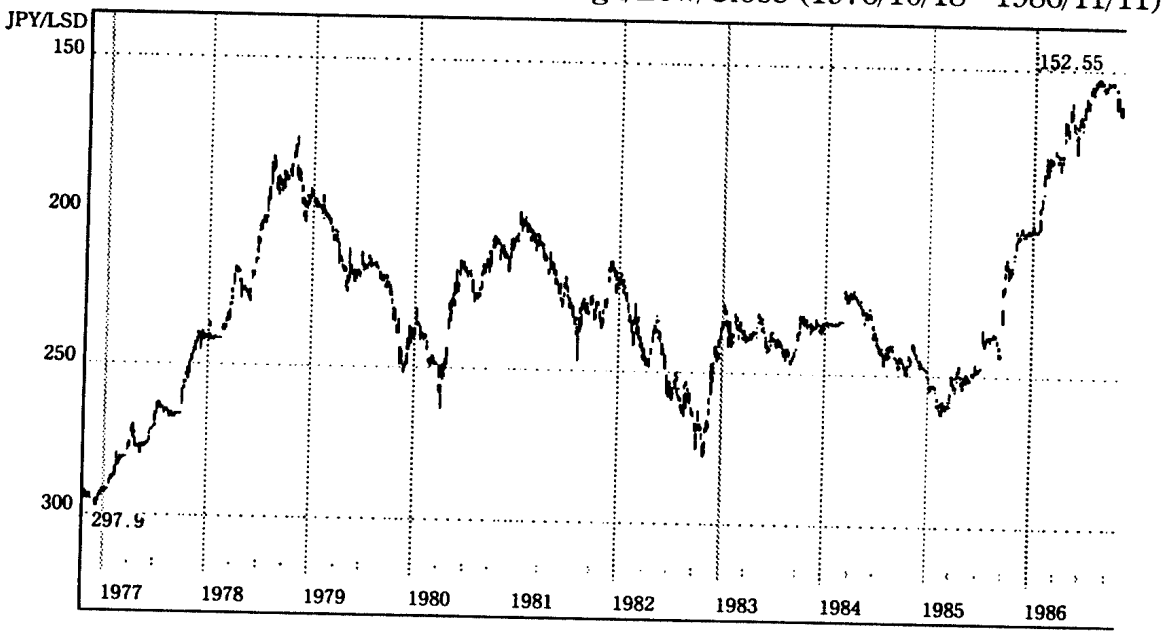
High/Low/Close (1973/03/19– 1976/11/06)



〈kawase Kinri CD-ROM〉 Toyokeizai [no.]

Exchange-rates, Tokyo market (yen/dollar)

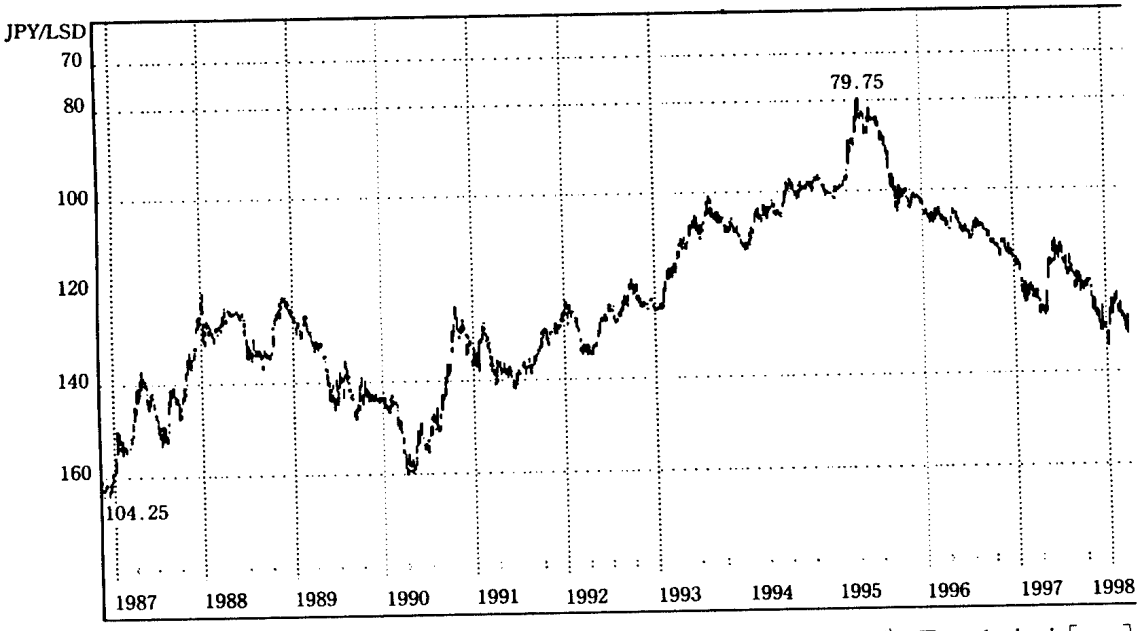
High/Low/Close (1976/10/18– 1986/11/11)



〈kawase Kinri CD-ROM〉 Toyokeizai [no.]

Exchange-rates, Tokyo market (yen/dollar)

High/Low/Close (1986/11/09– 1998/03/31)



〈kawase Kinri CD-ROM〉 Toyokeizai [no.]

Comparison of total domestic production between Japan and France: units: hundred thousand dollars.(1985)

			France	Japan
			1985	1985
1	(1)	Agriculture	328972	504361
2	(2)	Forestry & fisheries	23305	155212
3	(3)	Coal	9843	11317
4	(4)	Petroleum & natural gas	67717	5899
5	(5)	Other mining	10862	32019
6	(6)	Food & feed	464471	1090768
7	(7)	Drinks	52562	229043
8	(8)	Tobacco	13452	113165
9	(9)	Textile products	92351	321431
10	(10)	Apparel	100931	251262
11	(11)	Sawing, furniture & others	75697	237071
12	(12)	Pulps & paper	67764	240099
13	(13)	Chemicals	291479	724317
14	(14)	Oil product	268784	561873
15	(15)	Gum & plastic	100339	366966
16	(16)	Leather & its product	30919	56268
17	(17)	Glass & its products	26272	62442
18	(18)	Ceramics	69654	255876
19	(19)	Iron & its product	124643	679815
20	(20)	Non-ferrous metal	65874	151158
21	(21)	Metal product	145759	514368
22	(22)	General machinery	203069	690351
23	(23)	Office machinery & computer	44413	254114
24	(24)	Electric machinery	219264	1168373
25	(25)	Automobile & transport machinery	265320	952899
26	(26)	Ships	18806	84242
27	(27)	Air craft	63907	27273
28	(28)	Machinery of precision	30616	168870
29	(29)	Other manufacturing	165651	489299
30	(30)	Construction	594086	2343803
31	(31)	Electricity, water & heet supplies	186058	654708
32	(32)	Gas	297	74443
33	(33)	Commerce	760834	2514813
34	(34)	Finance	265082	667836
35	(35)	Insurance	85990	292037
36	(36)	Railway	46370	191694
37	(37)	Water transport	22795	153015
38	(38)	Other transport & services	268909	796979
39	(39)	Post & telecommunication	137236	278005
40	(40)	Public services & others	1301138	2556958
41	(41)	Hotel & restaurant	217340	796142
42	(42)	Other services	1176629	3286358
43	(43)	Others	11250	271232
44	(44)	Total intermediate input	8516710	25278174

(ratio of compositions %)

			France 1985	Japan 1985
1	(1)	Agriculture	3.9	2.0
2	(2)	Forestry & fisheries	0.3	0.6
3	(3)	Coal	0.1	0.0
4	(4)	Petroleum & natural gas	0.8	0.0
5	(5)	Other mining	0.1	0.1
6	(6)	Food & feed	5.5	4.3
7	(7)	Drinks	0.6	0.9
8	(8)	Tobacco	0.2	0.4
9	(9)	Textile products	1.1	1.3
10	(10)	Apparel	1.2	1.0
11	(11)	Sawing, furniture & others	0.9	0.9
12	(12)	Pulps & paper	0.8	0.9
13	(13)	Chemicals	3.4	2.9
14	(14)	Oil product	3.2	2.2
15	(15)	Gum & plastic	1.2	1.5
16	(16)	Leather & its product	0.4	0.2
17	(17)	Glass & its products	0.3	0.2
18	(18)	Ceramics	0.8	1.0
19	(19)	Iron & its product	1.5	2.7
20	(20)	Non-ferrous metal	0.8	0.6
21	(21)	Metal product	1.7	2.0
22	(22)	General machinery	2.4	2.7
23	(23)	Office machinery & computer	0.5	1.0
24	(24)	Electric machinery	2.6	4.6
25	(25)	Automobile & transport machinery	3.1	3.8
26	(26)	Ships	0.2	0.3
27	(27)	Air craft	0.8	0.1
28	(28)	Machinery of precision	0.4	0.7
29	(29)	Other manufacturing	1.9	1.9
30	(30)	Construction	7.0	9.3
31	(31)	Electricity, water & heet supplies	2.2	2.6
32	(32)	Gas	0.0	0.3
33	(33)	Commerce	8.9	9.9
34	(34)	Finance	3.1	2.6
35	(35)	Insurance	1.0	1.2
36	(36)	Railway	0.5	0.8
37	(37)	Water transport	0.3	0.6
38	(38)	Other transport & services	3.2	3.2
39	(39)	Post & telecommunication	1.6	1.1
40	(40)	Public services & others	15.3	10.1
41	(41)	Hotel & restaurant	2.6	3.1
42	(42)	Other services	13.8	13.0
43	(43)	Others	0.1	1.1
44	(44)	Total intermediate input	100.0	100.0

Various coefficients of I-O

		Japan		France	
		Influence	Sensitivity	Influence	Sensitivity
1 (1)	Agriculture	1.024909	1.249361	1.000347	1.051558
2 (2)	Forestry & fisheries	0.920907	0.806627	0.987325	0.772616
3 (3)	Coal	1.131319	0.767883	1.099951	0.520888
4 (4)	Petroleum & natural gas	0.775943	0.992519	0.886531	-1.304731
5 (5)	Other mining	1.036528	0.763091	1.083050	0.576503
6 (6)	Food & feed	1.235728	1.036556	1.194335	1.113389
7 (7)	Drinks	1.141564	0.741592	1.064743	0.747069
8 (8)	Tobacco	0.924482	0.709246	0.835823	0.663491
9 (9)	Textile products	1.032090	1.010045	1.216258	1.294002
10 (10)	Apparel	1.024133	0.778052	1.300465	0.700461
11 (11)	Sawing, furniture & others	1.069877	0.869193	1.084840	0.862566
12 (12)	Pulps & paper	0.843694	0.930106	1.100076	1.083682
13 (13)	Chemicals	1.072474	1.068151	1.076818	1.658955
14 (14)	Oil product	0.830204	1.460097	0.483055	1.407608
15 (15)	Gum & plastic	0.969044	0.981009	1.146507	1.166309
16 (16)	Leather & its product	1.034739	0.772061	1.145237	0.722918
17 (17)	Glass & its products	1.069553	0.749099	1.039398	0.734746
18 (18)	Ceramics	1.080894	0.831781	0.970386	0.809248
19 (19)	Iron & its product	0.845333	0.941689	1.021166	1.589719
20 (20)	Non-ferrous metal	0.888924	0.788845	0.878112	0.749991
21 (21)	Metal product	0.958585	1.136843	1.136562	1.083674
22 (22)	General machinery	1.043800	0.926638	1.169548	0.838555
23 (23)	Office machinery & computer	0.914980	0.726623	1.195445	0.658628
24 (24)	Electric machinery	1.017521	0.954405	1.183048	1.128149
25 (25)	Automobile & transport machinery	1.071375	0.808453	1.178772	1.027347
26 (26)	Ships	1.092642	0.753233	1.257873	0.689802
27 (27)	Air craft	0.985484	0.711285	0.863399	0.656015
28 (28)	Machinery of precision	0.981183	0.720083	1.113092	0.690202
29 (29)	Other manufacturing	1.063263	0.884727	1.135010	1.094832
30 (30)	Construction	1.106607	0.965190	1.196373	0.962434
31 (31)	Electricity, water & heet supplies	0.909476	1.691773	0.509004	1.601476
32 (32)	Gas	1.451740	0.701544	-0.256525	0.700370
33 (33)	Commerce	0.895974	1.588817	0.942137	2.214120
34 (34)	Finance	0.901666	1.800774	0.846740	1.788413
35 (35)	Insurance	1.033700	0.862692	0.930093	0.795033
36 (36)	Railway	0.944339	0.803732	1.141840	0.771502
37 (37)	Water transport	1.130864	0.711786	0.944420	0.698313
38 (38)	Other transport & services	0.962041	1.585328	0.942490	1.651086
39 (39)	Post & telecommunication	0.822595	1.043623	0.826650	0.911688
40 (40)	Public services & others	0.905262	0.897638	0.921957	1.004901
41 (41)	Hotel & restaurant	1.009319	0.810455	1.082462	1.148474
42 (42)	Other services	0.908737	3.286238	0.899195	2.920770
43 (43)	Others	0.936508	0.351114	1.225990	1.033228
44 (44)	Total intermediate input				

Derived production from final demand Inverse matrix: (I−(I−M)A) type
1985 (real) unit: $hundred thousand

France	(1) Private consumption expenditure	(2) consumption out of household	(3) Government general consumption expenditure	(4) Public fixed capital formation
1 (1) Agriculture	144701	82	5861	70
2 (2) Forestry & fisheries	10049	13	925	457
3 (3) Coal	3774	8	568	136
4 (4) Petroleum & natural gas	43700	56	4042	458
5 (5) Other mining	1369	13	900	104
6 (6) Food & feed	288508	178	12760	76
7 (7) Drinks	23420	15	1084	22
8 (8) Tobacco	11681	0	0	0
9 (9) Textile products	17326	13	934	637
10 (10) Apparel	56460	25	1806	162
11 (11) Sawing, furniture & others	30543	80	5730	5552
12 (12) Pulps & paper	19329	39	2787	339
13 (13) Chemicals	50001	111	7942	870
14 (14) Oil product	162404	145	10387	1994
15 (15) Gum & plastic	17235	20	1420	1386
16 (16) Leather & its product	11947	1	95	45
17 (17) Glass & its products	3941	3	227	323
18 (18) Ceramics	7328	32	2297	8610
19 (19) Iron & its product	-8219	12	893	1340
20 (20) Non-ferrous metal	2178	13	954	305
21 (21) Metal product	34820	33	2352	4366
22 (22) General machinery	6877	24	1720	1749
23 (23) Office machinery & computer	2374	4	306	247
24 (24) Electric machinery	24003	86	6195	7558
25 (25) Automobile & transport machinery	87441	25	1777	1472
26 (26) Ships	996	46	3312	7
27 (27) Air craft	333	15	1076	10
28 (28) Machinery of precision	2716	3	192	136
29 (29) Other manufacturing	68301	214	15332	683
30 (30) Construction	49748	376	26914	109853
31 (31) Electricity, water & heet supplies	117770	158	11326	1451
32 (32) Gas	697	1	56	-4
33 (33) Commerce	594284	157	11276	7552
34 (34) Finance	133044	557	39897	6555
35 (35) Insurance	70654	25	1786	824
36 (36) Railway	29946	26	1854	420
37 (37) Water transport	940	0	19	28
38 (38) Other transport & services	123901	136	9764	5038
39 (39) Post & telecommunication	104691	166	11884	1404
40 (40) Public services & others	236106	14241	1020575	501
41 (41) Hotel & restaurant	209613	62	4412	421
42 (42) Other services	703513	760	54456	16756
43 (43) Others	569659	-9	-626	-360
44 (44) Total intermediate input	4070101	17965	1287466	189557

		(5) Private capital formation	(6) net increase in inventories	(7) export	(8) adjustment term	(9) sum
1 (1)	Agriculture	1779	2316	77267	-85	231990
2 (2)	Forestry & fisheries	1739	-93	4535	43	17668
3 (3)	Coal	553	-516	2244	-2	6765
4 (4)	Petroleum & natural gas	2208	263	5546	-28	56246
5 (5)	Other mining	436	-101	3300	-35	5985
6 (6)	Food & feed	543	3983	71367	-104	377309
7 (7)	Drinks	118	-1203	11694	-58	35094
8 (8)	Tobacco	0	428	653	0	12762
9 (9)	Textile products	2560	-837	27931	1	48564
10 (10)	Apparel	1014	845	17492	33	77837
11 (11)	Sawing, furniture & others	13754	-1020	9500	20	64160
12 (12)	Pulps & paper	1803	-1041	18470	-1	41725
13 (13)	Chemicals	4315	612	82625	-692	145784
14 (14)	Oil product	8673	-4525	30932	-56	209954
15 (15)	Gum & plastic	6941	610	28899	-7	56503
16 (16)	Leather & its product	306	70	7261	-4	19720
17 (17)	Glass & its products	1387	-150	7556	-15	13273
18 (18)	Ceramics	31832	-819	9155	-13	58422
19 (19)	Iron & its product	5573	-873	55338	17	54082
20 (20)	Non-ferrous metal	1402	-1266	18256	-546	21297
21 (21)	Metal product	40120	1	16001	-62	97631
22 (22)	General machinery	61827	-607	50935	55	122580
23 (23)	Office machinery & computer	4300	40	11627	57	18956
24 (24)	Electric machinery	39167	-515	54404	-42	130856
25 (25)	Automobile & transport machinery	20603	-2658	41793	43	150496
26 (26)	Ships	1122	4481	3515	-12	13468
27 (27)	Air craft	311	-563	7747	795	9725
28 (28)	Machinery of precision	3241	109	7965	-45	14315
29 (29)	Other manufacturing	4059	-328	32565	140	120966
30 (30)	Construction	403540	-6207	2927	-5	587146
31 (31)	Electricity, water & heet supplies	7205	-251	16983	-77	154566
32 (32)	Gas	-10	12	-225	-1	526
33 (33)	Commerce	51882	-153	22225	-70	687153
34 (34)	Finance	30238	-395	3879	-18	213758
35 (35)	Insurance	3847	-16	-1260	-1	75859
36 (36)	Railway	2038	-28	4974	-7	39223
37 (37)	Water transport	104	-2	2361	-0	3449
38 (38)	Other transport & services	22954	-435	38076	-21	199413
39 (39)	Post & telecommunication	7731	-120	-6656	-7	119093
40 (40)	Public services & others	2611	-83	10662	21	1284634
41 (41)	Hotel & restaurant	2445	-20	-4179	-2	212751
42 (42)	Other services	114833	-956	109168	-19	998509
43 (43)	Others	-1498	374	-622067	-14	-54540
44 (44)	Total intermediate input	909607	-11638	293440	-823	6755675

Coefficients of derived production from final demands
1985 (real) unit: ratio

France	(1) Private consumption expenditure	(2) consumption out of household	(3) Government general consumption	(4) Public fixed capital formation
1 (1) Agriculture	0.054975	0.005785	0.005785	0.000551
2 (2) Forestry & fisheries	0.003818	0.000913	0.000913	0.003584
3 (3) Coal	0.001434	0.000560	0.000560	0.001064
4 (4) Petroleum & natural gas	0.016603	0.003989	0.003989	0.003594
5 (5) Other mining	0.000520	0.000888	0.000888	0.000813
6 (6) Food & feed	0.109610	0.012594	0.012594	0.000593
7 (7) Drinks	0.008898	0.001070	0.001070	0.000170
8 (8) Tobacco	0.004438	0.000000	0.000000	0.000000
9 (9) Textile products	0.006582	0.000922	0.000922	0.004997
10 (10) Apparel	0.021451	0.001782	0.001782	0.001270
11 (11) Sawing, furniture & others	0.011604	0.005656	0.005656	0.043537
12 (12) Pulps & paper	0.007343	0.002751	0.002751	0.002657
13 (13) Chemicals	0.018997	0.007839	0.007839	0.006824
14 (14) Oil product	0.061701	0.010253	0.010253	0.015638
15 (15) Gum & plastic	0.006548	0.001402	0.001402	0.010866
16 (16) Leather & its product	0.004539	0.000093	0.000093	0.000357
17 (17) Glass & its products	0.001497	0.000224	0.000224	0.002536
18 (18) Ceramics	0.002784	0.002267	0.002267	0.067516
19 (19) Iron & its product	-0.003123	0.000882	0.000882	0.010511
20 (20) Non-ferrous metal	0.000827	0.000941	0.000941	0.002392
21 (21) Metal product	0.013229	0.002321	0.002321	0.034240
22 (22) General machinery	0.002613	0.001698	0.001698	0.013714
23 (23) Office machinery & computer	0.000902	0.000302	0.000302	0.001935
24 (24) Electric machinery	0.009119	0.006114	0.006114	0.059265
25 (25) Automobile & transport machinery	0.033221	0.001754	0.001754	0.011546
26 (26) Ships	0.000378	0.003269	0.003269	0.000057
27 (27) Air craft	0.000127	0.001062	0.001062	0.000081
28 (28) Machinery of precision	0.001032	0.000189	0.000189	0.001063
29 (29) Other manufacturing	0.025949	0.015133	0.015133	0.005360
30 (30) Construction	0.018900	0.026565	0.026565	0.861441
31 (31) Electricity, water & heet supplies	0.044743	0.011179	0.011179	0.011401
32 (32) Gas	0.000265	0.000055	0.000055	-0.000028
33 (33) Commerce	0.225781	0.011130	0.011130	0.059225
34 (34) Finance	0.050546	0.039380	0.039380	0.051406
35 (35) Insurance	0.026843	0.001763	0.001763	0.006465
36 (36) Railway	0.011377	0.001830	0.001830	0.003290
37 (37) Water transport	0.000357	0.000018	0.000018	0.000217
38 (38) Other transport & services	0.047073	0.009637	0.009637	0.039508
39 (39) Post & telecommunication	0.039774	0.011730	0.011730	0.011011
40 (40) Public services & others	0.089702	1.007343	1.007343	0.003928
41 (41) Hotel & restaurant	0.079636	0.004355	0.004355	0.003302
42 (42) Other services	0.267279	0.053750	0.053750	0.131394
43 (43) Others	0.216426	-0.000618	-0.000618	-0.002821
44 (44) Total intermediate input	1.546318	1.270775	1.270775	1.486469

	(5) Private fixed capital formation	(6) net increase in inventories	(7) export	(8) adjustment term	(9) sum
1 (1) Agriculture	0.002618	-0.140352	0.062731	0.149237	0.040836
2 (2) Forestry & fisheries	0.002560	0.005650	0.003682	-0.074713	0.003110
3 (3) Coal	0.000814	0.031276	0.001822	0.003509	0.001191
4 (4) Petroleum & natural gas	0.003249	-0.015912	0.004503	0.048167	0.009901
5 (5) Other mining	0.000642	0.006125	0.002679	0.061985	0.001053
6 (6) Food & feed	0.000799	-0.241392	0.057940	0.181892	0.066415
7 (7) Drinks	0.000174	0.072893	0.009494	0.101044	0.006177
8 (8) Tobacco	0.000000	-0.025937	0.000530	0.000000	0.002246
9 (9) Textile products	0.003768	0.050739	0.022676	-0.001683	0.008548
10 (10) Apparel	0.001492	-0.051193	0.014201	-0.058057	0.013701
11 (11) Sawing, furniture & others	0.020243	0.061794	0.007712	-0.035098	0.011294
12 (12) Pulps & paper	0.002654	0.063086	0.014995	0.001199	0.007345
13 (13) Chemicals	0.006350	-0.037068	0.067080	1.209262	0.025662
14 (14) Oil product	0.012764	0.274239	0.025112	0.098362	0.036957
15 (15) Gum & plastic	0.010216	-0.036971	0.023462	0.011902	0.009946
16 (16) Leather & its product	0.000450	-0.004221	0.005895	0.006203	0.003471
17 (17) Glass & its products	0.002042	0.009067	0.006135	0.026085	0.002336
18 (18) Ceramics	0.046849	0.049651	0.007433	0.022033	0.010284
19 (19) Iron & its product	0.008202	0.052891	0.044927	-0.029603	0.009520
20 (20) Non-ferrous metal	0.002064	0.076706	0.014821	0.954121	0.003749
21 (21) Metal product	0.059047	-0.000066	0.012991	0.109008	0.017185
22 (22) General machinery	0.090994	0.036809	0.041352	-0.096999	0.021577
23 (23) Office machinery & computer	0.006329	-0.002419	0.009440	-0.099620	0.003337
24 (24) Electric machinery	0.057643	0.031197	0.044169	0.072586	0.023034
25 (25) Automobile & transport machinery	0.030322	0.161119	0.033931	-0.076039	0.026491
26 (26) Ships	0.001652	-0.271618	0.002854	0.021659	0.002371
27 (27) Air craft	0.000458	0.034131	0.006289	-1.389873	0.001712
28 (28) Machinery of precision	0.004770	-0.006581	0.006466	0.078642	0.002520
29 (29) Other manufacturing	0.005974	0.019862	0.026438	-0.244641	0.021293
30 (30) Construction	0.593909	0.376198	0.002377	0.008915	0.103352
31 (31) Electricity, water & heet supplies	0.010603	0.015238	0.013788	0.135478	0.027207
32 (32) Gas	-0.000014	-0.000737	-0.000183	0.001560	0.000093
33 (33) Commerce	0.076357	0.009300	0.018044	0.122383	0.120955
34 (34) Finance	0.044502	0.023930	0.003149	0.031295	0.037626
35 (35) Insurance	0.005661	0.000963	-0.001023	0.002363	0.013353
36 (36) Railway	0.003000	0.001670	0.004038	0.012551	0.006904
37 (37) Water transport	0.000154	0.000121	0.001917	0.000152	0.000607
38 (38) Other transport & services	0.033783	0.026382	0.030913	0.037239	0.035102
39 (39) Post & telecommunication	0.011378	0.007292	-0.005404	0.012076	0.020963
40 (40) Public services & others	0.003843	0.005038	0.008656	-0.036604	0.226126
41 (41) Hotel & restaurant	0.003598	0.001238	-0.003393	0.003396	0.037449
42 (42) Other services	0.169005	0.057952	0.088630	0.033620	0.175762
43 (43) Others	-0.002204	-0.022689	-0.505034	0.024540	-0.009600
44 (44) Total intermediate input	1.338713	0.705401	0.238234	1.439536	1.189161

Dependence degree of derived production from final demands
1985 (real) unit: ratio

France	(1) Private consumption expenditure	(2) consumption out of household	(3) Government general consumption	(4) Public fixed capital formation
1 (1) Agriculture	0.62374	0.00035	0.02527	0.00030
2 (2) Forestry & fisheries	0.56879	0.00073	0.05234	0.02587
3 (3) Coal	0.55796	0.00117	0.08393	0.02006
4 (4) Petroleum & natural gas	0.77695	0.00100	0.07186	0.00815
5 (5) Other mining	0.22873	0.00210	0.15039	0.01731
6 (6) Food & feed	0.76465	0.00047	0.03382	0.00020
7 (7) Drinks	0.66737	0.00043	0.03090	0.00062
8 (8) Tobacco	0.91532	0.00000	0.00000	0.00000
9 (9) Textile products	0.35676	0.00027	0.01922	0.01312
10 (10) Apparel	0.72537	0.00032	0.02320	0.00208
11 (11) Sawing, furniture & others	0.47605	0.00125	0.08931	0.08653
12 (12) Pulps & paper	0.46324	0.00093	0.06680	0.00812
13 (13) Chemicals	0.34298	0.00076	0.05448	0.00597
14 (14) Oil product	0.77352	0.00069	0.04947	0.00950
15 (15) Gum & plastic	0.30502	0.00035	0.02513	0.02452
16 (16) Leather & its product	0.60581	0.00007	0.00479	0.00231
17 (17) Glass & its products	0.29689	0.00024	0.01707	0.02437
18 (18) Ceramics	0.12543	0.00055	0.03932	0.14737
19 (19) Iron & its product	-0.15198	0.00023	0.01652	0.02478
20 (20) Non-ferrous metal	0.10227	0.00062	0.04478	0.01432
21 (21) Metal product	0.35662	0.00034	0.02409	0.04472
22 (22) General machinery	0.05610	0.00020	0.01403	0.01427
23 (23) Office machinery & computer	0.12526	0.00023	0.01614	0.01302
24 (24) Electric machinery	0.18343	0.00066	0.04734	0.05775
25 (25) Automobile & transport machinery	0.58101	0.00016	0.01181	0.00978
26 (26) Ships	0.07392	0.00343	0.24594	0.00054
27 (27) Air craft	0.03427	0.00154	0.11069	0.00106
28 (28) Machinery of precision	0.18975	0.00019	0.01338	0.00947
29 (29) Other manufacturing	0.56463	0.00177	0.12674	0.00565
30 (30) Construction	0.08473	0.00064	0.04584	0.18710
31 (31) Electricity, water & heet supplies	0.76194	0.00102	0.07328	0.00941
32 (32) Gas	1.32454	0.00148	0.10576	-0.00677
33 (33) Commerce	0.86485	0.00023	0.01641	0.01099
34 (34) Finance	0.62241	0.00260	0.18665	0.03067
35 (35) Insurance	0.93139	0.00033	0.02355	0.01087
36 (36) Railway	0.76347	0.00066	0.04727	0.01070
37 (37) Water transport	0.27240	0.00008	0.00542	0.00803
38 (38) Other transport & services	0.62133	0.00068	0.04896	0.02526
39 (39) Post & telecommunication	0.87907	0.00139	0.09979	0.01179
40 (40) Public services & others	0.18379	0.01109	0.79445	0.00039
41 (41) Hotel & restaurant	0.98525	0.00029	0.02074	0.00198
42 (42) Other services	0.70456	0.00076	0.05454	0.01678
43 (43) Others	0.44489	0.00016	0.01148	0.00660
44 (44) Total intermediate input	0.60247	0.00266	0.19058	0.02806

	(5) Private fixed capital formation	(6) net increase in inventories	(7) export	(8) adjustment term	(9) sum
1 (1) Agriculture	0.00767	0.00998	0.33306	-0.00037	1.00000
2 (2) Forestry & fisheries	0.09844	-0.00528	0.25669	0.00242	1.00000
3 (3) Coal	0.08172	-0.07628	0.33174	-0.00030	1.00000
4 (4) Petroleum & natural gas	0.03925	0.00467	0.09861	-0.00049	1.00000
5 (5) Other mining	0.07291	-0.01689	0.55137	-0.00592	1.00000
6 (6) Food & feed	0.00144	0.01056	0.18915	-0.00028	1.00000
7 (7) Drinks	0.00337	-0.03427	0.33323	-0.00165	1.00000
8 (8) Tobacco	0.00000	0.03353	0.05115	0.00000	1.00000
9 (9) Textile products	0.05271	-0.01724	0.57513	0.00002	1.00000
10 (10) Apparel	0.01302	0.01085	0.22473	0.00043	1.00000
11 (11) Sawing, furniture & others	0.21439	-0.01589	0.14806	0.00031	1.00000
12 (12) Pulps & paper	0.04322	-0.02495	0.44266	-0.00002	1.00000
13 (13) Chemicals	0.02960	0.00420	0.56676	-0.00474	1.00000
14 (14) Oil product	0.04131	-0.02155	0.14733	-0.00027	1.00000
15 (15) Gum & plastic	0.12285	0.01080	0.51145	-0.00012	1.00000
16 (16) Leather & its product	0.01549	0.00353	0.36818	-0.00018	1.00000
17 (17) Glass & its products	0.10453	-0.01127	0.56930	-0.00112	1.00000
18 (18) Ceramics	0.54486	-0.01402	0.15671	-0.00022	1.00000
19 (19) Iron & its product	0.10305	-0.01614	1.02322	0.00031	1.00000
20 (20) Non-ferrous metal	0.06585	-0.05942	0.85720	-0.02563	1.00000
21 (21) Metal product	0.41094	0.00001	0.16389	-0.00064	1.00000
22 (22) General machinery	0.50438	-0.00495	0.41552	0.00045	1.00000
23 (23) Office machinery & computer	0.22686	0.00211	0.61338	0.00301	1.00000
24 (24) Electric machinery	0.29931	-0.00393	0.41576	-0.00032	1.00000
25 (25) Automobile & transport machinery	0.13690	-0.01766	0.27770	0.00029	1.00000
26 (26) Ships	0.08334	0.33274	0.26101	-0.00092	1.00000
27 (27) Air craft	0.03200	-0.05791	0.79659	0.08175	1.00000
28 (28) Machinery of precision	0.22641	0.00758	0.55637	-0.00314	1.00000
29 (29) Other manufacturing	0.03355	-0.00271	0.26921	0.00116	1.00000
30 (30) Construction	0.68729	-0.01057	0.00499	-0.00001	1.00000
31 (31) Electricity, water & heet supplies	0.04661	-0.00163	0.10987	0.00050	1.00000
32 (32) Gas	-0.01807	0.02309	-0.42833	-0.00170	1.00000
33 (33) Commerce	0.07550	-0.00022	0.03234	-0.00010	1.00000
34 (34) Finance	0.14146	-0.00185	0.01815	-0.00008	1.00000
35 (35) Insurance	0.05071	-0.00021	-0.01661	-0.00002	1.00000
36 (36) Railway	0.05197	-0.00070	0.12682	-0.00018	1.00000
37 (37) Water transport	0.03027	-0.00058	0.68441	-0.00003	1.00000
38 (38) Other transport & services	0.11511	-0.00218	0.19094	-0.00011	1.00000
39 (39) Post & telecommunication	0.06492	-0.00101	-0.05589	-0.00006	1.00000
40 (40) Public services & others	0.00203	-0.00006	0.00830	0.00002	1.00000
41 (41) Hotel & restaurant	0.01149	-0.00010	-0.01964	0.00001	1.00000
42 (42) Other services	0.11500	-0.00096	0.10933	-0.00002	1.00000
43 (43) Others	0.02745	-0.00686	0.40580	0.00026	1.00000
44 (44) Total intermediate input	0.13464	-0.00172	0.04344	-0.00012	1.00000

Derived production from final demand Inverse matrix: (I−(I−M)) type
1985 (real) unit: $ hundred thousand

Japan	(1) Private consumption expenditure	(2) consumption out of household	(3) Government general consumption	(4) Public fixed capital formation
1 (1) Agriculture	315139	518	6175	2633
2 (2) Forestry & fisheries	63909	133	1582	3674
3 (3) Coal	-16798	-173	-2057	-3233
4 (4) Petroleum & natural gas	-281985	-2237	-26673	-22380
5 (5) Other mining	-4636	-39	-463	-8271
6 (6) Food & feed	874035	1168	13926	4765
7 (7) Drinks	195834	215	2566	1987
8 (8) Tobacco	104330	46	547	569
9 (9) Textile products	155665	342	4083	5017
10 (10) Apparel	207746	274	3266	1537
11 (11) Sawing, furniture & others	57932	448	5347	41149
12 (12) Pulps & paper	107642	969	11559	10916
13 (13) Chemicals	264787	6243	74440	21983
14 (14) Oil product	234507	1832	21840	27569
15 (15) Gum & plastic	120982	732	8728	25185
16 (16) Leather & its product	40739	36	433	434
17 (17) Glass & its products	17307	114	1353	4243
18 (18) Ceramics	32924	252	3006	67999
19 (19) Iron & its product	82067	564	6723	61872
20 (20) Non-ferrous metal	11046	88	1049	5032
21 (21) Metal product	82449	572	6816	80533
22 (22) General machinery	41197	276	3288	24564
23 (23) Office machinery & computer	11105	42	506	14643
24 (24) Electric machinery	202018	610	7279	87325
25 (25) Automobile & transport machinery	253546	711	8481	19643
26 (26) Ships	3672	166	1982	779
27 (27) Air craft	4893	385	4586	379
28 (28) Machinery of precision	33072	168	2000	6463
29 (29) Other manufacturing	233913	2576	30720	18927
30 (30) Construction	129262	1475	17592	813375
31 (31) Electricity, water & heet supplies	334429	3108	37055	26189
32 (32) Gas	57101	295	3521	1955
33 (33) Commerce	1591304	4182	49871	86844
34 (34) Finance	308824	1862	22199	36783
35 (35) Insurance	242634	218	2600	4665
36 (36) Railway	145419	553	6589	4486
37 (37) Water transport	11829	82	981	1841
38 (38) Other transport & services	400525	1677	19997	48684
39 (39) Post & telecommunication	187618	1163	13867	9087
40 (40) Public services & others	1080014	106381	1268452	10897
41 (41) Hotel & restaurant	584156	1445	17232	19238
42 (42) Other services	2389264	9891	117933	107431
43 (43) Others	63251	994	11847	16052
44 (44) Total intermediate input	10974663	150359	1792829	1693461

	(5) Private fixed capital formation	(6) net increase in inventories	(7) export	(8) adjustment term	(9) sum
1 (1) Agriculture	15036	8803	9386	-37	357653
2 (2) Forestry & fisheries	8116	863	3796	58	82131
3 (3) Coal	-8958	-189	-8974	22	-40360
4 (4) Petroleum & natural gas	-61370	80964	-56593	205	-370070
5 (5) Other mining	-14223	-17	-2748	-10	-30407
6 (6) Food & feed	14562	10268	23628	-135	942217
7 (7) Drinks	5788	-203	5667	-20	211835
8 (8) Tobacco	1600	-2501	1232	-5	105818
9 (9) Textile products	21553	4295	68869	-142	259682
10 (10) Apparel	7612	-407	11236	-27	231238
11 (11) Sawing, furniture & others	89484	-347	11163	-45	205130
12 (12) Pulps & paper	31408	2282	33523	-145	198155
13 (13) Chemicals	66974	4536	150454	-778	588639
14 (14) Oil product	64533	-119	56092	-148	406106
15 (15) Gum & plastic	74669	4243	96010	-430	330119
16 (16) Leather & its product	1443	-45	5254	-14	48282
17 (17) Glass & its products	11122	1762	14341	-55	50186
18 (18) Ceramics	117050	681	22982	-57	244837
19 (19) Iron & its product	202746	9749	270010	-431	633301
20 (20) Non-ferrous metal	18224	601	23767	-150	59657
21 (21) Metal product	232126	3565	81002	-402	486660
22 (22) General machinery	378615	16223	189418	-447	653133
23 (23) Office machinery & computer	110306	1095	79853	-1965	215586
24 (24) Electric machinery	356951	22796	437417	-2970	1111426
25 (25) Automobile & transport machinery	164552	8637	435786	-866	890490
26 (26) Ships	11925	-2650	62238	-76	78036
27 (27) Air craft	11292	-469	1559	-2	22622
28 (28) Machinery of precision	36308	5542	65747	-718	148582
29 (29) Other manufacturing	63653	2542	54381	-449	406264
30 (30) Construction	1342376	1780	20435	-73	2326222
31 (31) Electricity, water & heet supplies	81045	10502	75332	-315	567345
32 (32) Gas	4983	200	3831	-16	71872
33 (33) Commerce	392468	17794	247971	-1124	2389310
34 (34) Finance	113390	6617	97294	-386	586583
35 (35) Insurance	11848	784	12405	-30	275124
36 (36) Railway	14610	814	11018	-43	183445
37 (37) Water transport	4873	406	84441	-17	104436
38 (38) Other transport & services	130214	6699	125453	-271	732981
39 (39) Post & telecommunication	26859	1676	20040	-77	260234
40 (40) Public services & others	32960	2455	30513	-93	2531580
41 (41) Hotel & restaurant	56126	3340	46197	-197	727538
42 (42) Other services	282328	16997	190578	-804	3113618
43 (43) Others	46892	3260	66244	123	208663
44 (44) Total intermediate input	4574070	255826	3178252	-13561	22605899

Coefficients of derived production from final demand
1985 (real) unit:ratio

Japan	(1) Private consumption expenditure	(2) consumption out of household	(3) Government general consumption	(4) Public fixed capital formation
1 (1) Agriculture	0.041348	0.004893	0.004893	0.002833
2 (2) Forestry & fisheries	0.008385	0.001254	0.001254	0.003955
3 (3) Coal	-0.002204	-0.001630	-0.001630	-0.003480
4 (4) Petroleum & natural gas	-0.036998	-0.021134	-0.021134	-0.024087
5 (5) Other mining	-0.000608	-0.000367	-0.000367	-0.008902
6 (6) Food & feed	0.114677	0.011034	0.011034	0.005128
7 (7) Drinks	0.025694	0.002033	0.002033	0.002139
8 (8) Tobacco	0.013689	0.000434	0.000434	0.000612
9 (9) Textile products	0.020424	0.003235	0.003235	0.005399
10 (10) Apparel	0.027257	0.002588	0.002588	0.001654
11 (11) Sawing, furniture & others	0.007601	0.004236	0.004236	0.044287
12 (12) Pulps & paper	0.014123	0.009159	0.009159	0.011749
13 (13) Chemicals	0.034741	0.058981	0.058981	0.023660
14 (14) Oil product	0.030768	0.017305	0.017305	0.029672
15 (15) Gum & plastic	0.015873	0.006915	0.006915	0.027106
16 (16) Leather & its product	0.005345	0.000343	0.000343	0.000468
17 (17) Glass & its products	0.002271	0.001072	0.001072	0.004567
18 (18) Ceramics	0.004320	0.002382	0.002382	0.073187
19 (19) Iron & its product	0.010768	0.005327	0.005327	0.066592
20 (20) Non-ferrous metal	0.001449	0.000831	0.000831	0.005416
21 (21) Metal product	0.010818	0.005400	0.005400	0.086676
22 (22) General machinery	0.005405	0.002605	0.002605	0.026438
23 (23) Office machinery & computer	0.001457	0.000401	0.000401	0.015760
24 (24) Electric machinery	0.026506	0.005767	0.005767	0.093986
25 (25) Automobile & transport machinery	0.033266	0.006720	0.006720	0.021141
26 (26) Ships	0.000482	0.001571	0.001571	0.000838
27 (27) Air craft	0.000642	0.003634	0.003634	0.000408
28 (28) Machinery of precision	0.004339	0.001585	0.001585	0.006956
29 (29) Other manufacturing	0.030690	0.024341	0.024341	0.020371
30 (30) Construction	0.016960	0.013939	0.013939	0.875420
31 (31) Electricity, water & heet supplies	0.043879	0.029360	0.029360	0.028187
32 (32) Gas	0.007492	0.002790	0.002790	0.002104
33 (33) Commerce	0.208786	0.039514	0.039514	0.093469
34 (34) Finance	0.040519	0.017589	0.017589	0.039589
35 (35) Insurance	0.031835	0.002060	0.002060	0.005020
36 (36) Railway	0.019080	0.005221	0.005221	0.004828
37 (37) Water transport	0.001552	0.000778	0.000778	0.001981
38 (38) Other transport & services	0.052551	0.015845	0.015845	0.052398
39 (39) Post & telecommunication	0.024616	0.010987	0.010987	0.009780
40 (40) Public services & others	0.141703	1.005035	1.005035	0.011728
41 (41) Hotel & restaurant	0.076644	0.013654	0.013654	0.020706
42 (42) Other services	0.313482	0.093442	0.093442	0.115626
43 (43) Others	0.008299	0.009386	0.009386	0.017276
44 (44) Total intermediate input	1.439926	1.420516	1.420516	1.822641

	(5) Private fixed capital formation	(6) net increase in inventories	(7) export	(8) adjustment term	(9) sum
1 (1) Agriculture	0.005759	0.111878	0.004759	0.004877	0.024542
2 (2) Forestry & fisheries	0.003109	0.010973	0.001924	-0.007609	0.005636
3 (3) Coal	-0.003431	-0.002402	-0.004550	-0.002863	-0.002769
4 (4) Petroleum & natural gas	-0.023507	1.028974	-0.028691	-0.026777	-0.025394
5 (5) Other mining	-0.005448	-0.000214	-0.001393	0.001275	-0.002087
6 (6) Food & feed	0.005578	0.130496	0.011979	0.017612	0.064655
7 (7) Drinks	0.002217	-0.002578	0.002873	0.002636	0.014536
8 (8) Tobacco	0.000613	-0.031784	0.000624	0.000687	0.007261
9 (9) Textile products	0.008256	0.054580	0.034915	0.018569	0.017819
10 (10) Apparel	0.002916	-0.005176	0.005697	0.003480	0.015868
11 (11) Sawing, furniture & others	0.034276	-0.004404	0.005659	0.005907	0.014076
12 (12) Pulps & paper	0.012030	0.029005	0.016996	0.019004	0.013597
13 (13) Chemicals	0.025654	0.057649	0.076277	0.101739	0.040393
14 (14) Oil product	0.024719	-0.001513	0.028438	0.019298	0.027867
15 (15) Gum & plastic	0.028601	0.053919	0.048675	0.056279	0.022653
16 (16) Leather & its product	0.000553	-0.000566	0.002664	0.001827	0.003313
17 (17) Glass & its products	0.004260	0.022389	0.007270	0.007242	0.003444
18 (18) Ceramics	0.044835	0.008658	0.011651	0.007479	0.016801
19 (19) Iron & its product	0.077659	0.123902	0.136890	0.056342	0.043457
20 (20) Non-ferrous metal	0.006980	0.007634	0.012050	0.019549	0.004094
21 (21) Metal product	0.088913	0.045313	0.041067	0.052601	0.033395
22 (22) General machinery	0.145024	0.206180	0.096031	0.058471	0.044818
23 (23) Office machinery & computer	0.042252	0.013916	0.040484	0.256884	0.014794
24 (24) Electric machinery	0.136726	0.289714	0.221761	0.388227	0.076266
25 (25) Automobile & transport machinery	0.063030	0.109765	0.220934	0.113255	0.061106
26 (26) Ships	0.004568	-0.033684	0.031553	0.009919	0.005355
27 (27) Air craft	0.004325	-0.005960	0.000790	0.000265	0.001552
28 (28) Machinery of precision	0.013907	0.070438	0.033332	0.093898	0.010196
29 (29) Other manufacturing	0.024382	0.032308	0.027570	0.058742	0.027878
30 (30) Construction	0.514182	0.022616	0.010360	0.009536	0.159626
31 (31) Electricity, water & heet supplies	0.031043	0.133470	0.038192	0.041156	0.038931
32 (32) Gas	0.001909	0.002548	0.001942	0.002050	0.004932
33 (33) Commerce	0.150331	0.226141	0.125716	0.146951	0.163955
34 (34) Finance	0.043433	0.084092	0.049326	0.050441	0.040251
35 (35) Insurance	0.004538	0.009968	0.006289	0.003882	0.018879
36 (36) Railway	0.005596	0.010346	0.005586	0.005562	0.012588
37 (37) Water transport	0.001866	0.005161	0.042810	0.002255	0.007166
38 (38) Other transport & services	0.049877	0.085137	0.063603	0.035389	0.050297
39 (39) Post & telecommunication	0.010288	0.021304	0.010160	0.010007	0.017857
40 (40) Public services & others	0.012625	0.031202	0.015470	0.012151	0.173718
41 (41) Hotel & restaurant	0.021498	0.042451	0.023421	0.025694	0.049924
42 (42) Other services	0.108143	0.216021	0.096619	0.105082	0.213657
43 (43) Others	0.017962	0.041438	0.033584	-0.016092	0.014318
44 (44) Total intermediate input	1.752047	3.251303	1.611306	1.772881	1.551222

Dependence degree of derived production from final demand
1985 (real) unit:ratio

Japan	(1) Private consumption expenditure	(2) consumption out of household	(3) Government general consumption	(4) Public fixed capital formation
1 (1) Agriculture	0.88113	0.00145	0.01727	0.00736
2 (2) Forestry & fisheries	0.77813	0.00162	0.01926	0.04474
3 (3) Coal	0.41621	0.00427	0.05096	0.08011
4 (4) Petroleum & natural gas	0.76198	0.00604	0.07208	0.06048
5 (5) Other mining	0.15247	0.00128	0.01523	0.27202
6 (6) Food & feed	0.92764	0.00124	0.01478	0.00506
7 (7) Drinks	0.92447	0.00102	0.01211	0.00938
8 (8) Tobacco	0.98594	0.00043	0.00517	0.00538
9 (9) Textile products	0.59945	0.00132	0.01572	0.01932
10 (10) Apparel	0.89841	0.00118	0.01412	0.00665
11 (11) Sawing, furniture & others	0.28241	0.00219	0.02606	0.20060
12 (12) Pulps & paper	0.54322	0.00489	0.05833	0.05509
13 (13) Chemicals	0.44983	0.01061	0.12646	0.03735
14 (14) Oil product	0.57745	0.00451	0.05378	0.06789
15 (15) Gum & plastic	0.36648	0.00222	0.02644	0.07629
16 (16) Leather & its product	0.84378	0.00075	0.00897	0.00900
17 (17) Glass & its products	0.34485	0.00226	0.02697	0.08455
18 (18) Ceramics	0.13447	0.00103	0.01228	0.27773
19 (19) Iron & its product	0.12959	0.00089	0.01062	0.09770
20 (20) Non-ferrous metal	0.18516	0.00147	0.01758	0.08435
21 (21) Metal product	0.16942	0.00117	0.01400	0.16548
22 (22) General machinery	0.06308	0.00042	0.00503	0.03761
23 (23) Office machinery & computer	0.05151	0.00020	0.00235	0.06792
24 (24) Electric machinery	0.18176	0.00055	0.00655	0.07857
25 (25) Automobile & transport machinery	0.28473	0.00080	0.00952	0.02206
26 (26) Ships	0.04705	0.00213	0.02540	0.00998
27 (27) Air craft	0.21627	0.01700	0.20274	0.01676
28 (28) Machinery of precision	0.22259	0.00113	0.01346	0.04349
29 (29) Other manufacturing	0.57577	0.00634	0.07562	0.04659
30 (30) Construction	0.05557	0.00063	0.00756	0.34965
31 (31) Electricity, water & heet supplies	0.58946	0.00548	0.06531	0.04616
32 (32) Gas	0.79449	0.00411	0.04899	0.02720
33 (33) Commerce	0.66601	0.00175	0.02087	0.03635
34 (34) Finance	0.52648	0.00317	0.03785	0.06271
35 (35) Insurance	0.88191	0.00079	0.00945	0.01695
36 (36) Railway	0.79271	0.00301	0.03592	0.02445
37 (37) Water transport	0.11327	0.00079	0.00940	0.01763
38 (38) Other transport & services	0.54643	0.00229	0.02728	0.06642
39 (39) Post & telecommunication	0.72096	0.00447	0.05329	0.03492
40 (40) Public services & others	0.42662	0.04202	0.50105	0.00430
41 (41) Hotel & restaurant	0.80292	0.00199	0.02369	0.02644
42 (42) Other services	0.76736	0.00318	0.03788	0.03450
43 (43) Others	0.30313	0.00476	0.05677	0.07693
44 (44) Total intermediate input	0.48548	0.00665	0.07931	0.07491

	(5) Private fixed capital formation	(6) net increase in inventories	(7) export	(8) adjustment term	(9) sum
1 (1) Agriculture	0.04204	0.02461	0.02624	-0.00010	1.00000
2 (2) Forestry & fisheries	0.09882	0.01051	0.04622	0.00071	1.00000
3 (3) Coal	0.22195	0.00468	0.22235	-0.00054	1.00000
4 (4) Petroleum & natural gas	0.16583	-0.21878	0.15292	-0.00055	1.00000
5 (5) Other mining	0.46775	0.00055	0.09038	0.00032	1.00000
6 (6) Food & feed	0.01546	0.01090	0.02508	-0.00014	1.00000
7 (7) Drinks	0.02733	-0.00096	0.02675	-0.00010	1.00000
8 (8) Tobacco	0.01512	-0.02363	0.01164	-0.00005	1.00000
9 (9) Textile products	0.08300	0.01654	0.26520	-0.00055	1.00000
10 (10) Apparel	0.03292	-0.00176	0.04859	-0.00012	1.00000
11 (11) Sawing, furniture & others	0.43623	-0.00169	0.05442	-0.00022	1.00000
12 (12) Pulps & paper	0.15850	0.01152	0.16918	-0.00073	1.00000
13 (13) Chemicals	0.11378	0.00771	0.25560	-0.00132	1.00000
14 (14) Oil product	0.15891	-0.00029	0.13812	-0.00036	1.00000
15 (15) Gum & plastic	0.22619	0.01285	0.29084	-0.00130	1.00000
16 (16) Leather & its product	0.02989	-0.00092	0.10882	-0.00029	1.00000
17 (17) Glass & its products	0.22162	0.03510	0.28575	-0.00110	1.00000
18 (18) Ceramics	0.47807	0.00278	0.09387	-0.00023	1.00000
19 (19) Iron & its product	0.32014	0.01539	0.42635	-0.00068	1.00000
20 (20) Non-ferrous metal	0.30547	0.01007	0.39840	-0.00251	1.00000
21 (21) Metal product	0.47698	0.00733	0.16645	-0.00083	1.00000
22 (22) General machinery	0.57969	0.02484	0.29001	-0.00068	1.00000
23 (23) Office machinery & computer	0.51166	0.00508	0.37040	-0.00911	1.00000
24 (24) Electric machinery	0.32116	0.02051	0.39356	-0.00267	1.00000
25 (25) Automobile & transport machinery	0.18479	0.00970	0.48938	-0.00097	1.00000
26 (26) Ships	0.15282	-0.03396	0.79755	-0.00097	1.00000
27 (27) Air craft	0.49915	-0.02073	0.06890	-0.00009	1.00000
28 (28) Machinery of precision	0.24436	0.03730	0.44250	-0.00483	1.00000
29 (29) Other manufacturing	0.15668	0.00626	0.13386	-0.00111	1.00000
30 (30) Construction	0.57706	0.00076	0.00878	-0.00003	1.00000
31 (31) Electricity, water & heet supplies	0.14285	0.01851	0.13278	-0.00055	1.00000
32 (32) Gas	0.06933	0.00279	0.05331	-0.00022	1.00000
33 (33) Commerce	0.16426	0.00745	0.10378	-0.00047	1.00000
34 (34) Finance	0.19331	0.01128	0.16580	-0.00066	1.00000
35 (35) Insurance	0.04306	0.00285	0.04509	-0.00011	1.00000
36 (36) Railway	0.07964	0.00444	0.06006	-0.00023	1.00000
37 (37) Water transport	0.04666	0.00389	0.80854	-0.00017	1.00000
38 (38) Other transport & services	0.17765	0.00914	0.17116	-0.00037	1.00000
39 (39) Post & telecommunication	0.10321	0.00644	0.07701	-0.00029	1.00000
40 (40) Public services & others	0.01302	0.00097	0.01205	-0.00004	1.00000
41 (41) Hotel & restaurant	0.07715	0.00459	0.06350	-0.00020	1.00000
42 (42) Other services	0.09068	0.00546	0.06121	-0.00026	1.00000
43 (43) Others	0.22473	0.01563	0.31747	0.00059	1.00000
44 (44) Total intermediate input	0.20234	0.01132	0.14059	-0.00060	1.00000

note

(1) Patrick Artus, "La concurrence sociale va-t-elle remplacer la concurrence par les taux de change?", Annales d'économie et de statistique, No.48, octobre/décembre, 1997, pp. 83 – 100
(2) P. Artus, op. cit., pp. 86– 87.
(3) P. Artus, op. cit., pp. 87– 88.
(4) P. Artus, op. cit., pp. 88– 89.
(5) P. Artus, op. cit., P. 89
(6) P. Artus, op. cit., pp. 89– 90.
(7) P. Artus, op. cit., P. 90
(8) P. Artus, op. cit., P. 91
(9) P. Artus, op. cit., pp. 91– 92.
(10) P. Artus, op. cit., pp. 92– 93.
(11) P. Artus, op. cit., pp. 93– 94.
(12) P. Artus, op. cit., p. 94
(13) P. Artus, op. cit., pp. 95– 96.
(14) P. Artus, op. cit., p. 96
(15) P. Artus, op. cit., p. 96
(16) P. Artus, op. cit., pp. 96– 97.
(17) P. Artus, op. cit., pp. 97.
(18) P. Artus, op. cit., pp. 97.
(19) P. Artus, op. cit., pp. 83– 86, p. 91, p. 93, pp. 98– 100.
(20) Newell, A. & Symonds, J, "Corporatism, Laissey-Faire and the Rise of Unemployment" European Economic Review, 31, No3, 1987 pp. 567– 601.
(21) Musgrave, p., "International Tax Competition and Gains from Tax Harmonisation", NBER Working Paper No 3152, 1987.
(22) Razin, A., & Sadka, E., "International Fiscal Coordination and Competition: an Exposition", NBER Working Paper, no 3797, 1991
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(24) B. A. Blonigen, "Firm-Specific Assets and the Link Between Exchange-rates and Foreign Direct Investment", The American Economic Review, June 1997, pp. 447– 465.
(25) B. A. Blonigen, op.cit., p. 456
(26) The Oriental Economist Publishing, "The Exchange rates & the rates of interest", CD-ROM for Window 95, 1998
(27) Nikkei Data, Needs I-O, JPFR 85 NP 86, JPFR85@86&43, 1998. manual, Needs, 1998

3. Short and long-terms forecasts by I-O data in 1995 and in 1996

After having investigated in detail the model by P. Artus which had been able to give a good deal of suggestions for the interpretation of the relationships between the Japan and the U. S.[1], but some similar model building is not meaningful for the explanations on the actual conditions, because, for example, the fundamental assumptions, the target-zones of normal fluctuations of the exchange-rates are equal

to the parities +15%/−15% have been maintained within the European Exchange -rate Mechanism from 1993 to 1998 and perhaps, would continue to be maintained for a rather long time in future, however, the yen-dollar exchange-rates have fluctuated from 79.75 yen in April 1995 to 147 yen in June 1998 during the period of only three years[2], so the simple model like that by P. Artus seems not to be suitable for the analysis on actual conditions of our economy[3]. Therefore, instead of simple model construction on the relationships between the Japan and the U. S., we are going to represent some scenarios of the future Japanese economy based on the forecasts[4] of final demands for 2002[5] and 2010[6]. There have been a great number of theoretical and econometric models on the Japanese economy, but most of estimated results based on these models seem not to have had explanatory powers sufficiently, because the fundamental and structural conditions, the international enviroments and the political structures of our economy have changed very much recently[7]. Therefore, we should like to show only a few scenarios based on merely the forecast for the final demands in 2002 and in 2010 by the Needs economy (about 380 equations) and the Economate-W (about 100 equations)[8]

Composition ratio of total domestic production:% (60 sectors)

composition ratio: %	1980	1985	1990	1995	1996	1998	2000	2002
1 agriculture, foresty & fisheries	2.8	2.6	2.1	1.7	1.6	1.6	1.6	1.6
2 mining	0.5	0.3	0.2	0.2	0.2	0.1	0.1	0.1
3 food	3.8	4.2	3.3	3.3	3.2	3.2	3.2	3.1
4 drinks	0.8	0.9	0.9	0.8	0.8	0.8	0.8	0.8
5 tobacco	0.5	0.4	0.3	0.3	0.3	0.3	0.3	0.3
6 fiber & spinnig	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1
7 textile & fiber product	1.2	1.0	0.7	0.6	0.5	0.5	0.5	0.4
8 sawing & furniture	1.5	1.2	1.1	0.9	0.9	0.8	0.8	0.8
9 pulps & paper	1.3	1.2	1.1	1.0	1.0	1.0	1.0	1.0
10 printing & publication	1.2	1.3	1.4	1.3	1.3	1.2	1.3	1.3
11 gum product	0.4	0.4	0.4	0.4	0.4	0.3	0.3	0.3
12 basic chemicals	1.5	1.6	1.5	1.4	1.4	1.4	1.4	1.4
13 synthetic fiber	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1
14 other chemicals	1.0	1.3	1.5	1.5	1.5	1.5	1.5	1.6
15 oil product	1.9	1.5	1.1	1.1	1.1	1.1	1.0	1.0
16 coal product	0.5	0.3	0.2	0.2	0.2	0.2	0.2	0.2
17 ceramics	1.5	1.3	1.2	1.1	1.0	1.0	1.0	1.0
18 iron manufacture	1.7	1.2	0.8	0.9	0.8	0.9	0.8	0.8
19 other iron & steel	3.1	2.7	2.2	2.1	2.1	2.1	2.1	2.1
20 non-ferrous metal	0.9	0.9	0.9	0.8	0.8	0.8	0.8	0.8
21 metal product	2.0	1.8	1.9	1.8	1.8	1.9	1.8	1.8
22 general machinery	4.1	4.5	4.8	4.1	4.2	4.2	4.3	4.3
23 industrial electric machinery	0.7	0.6	0.7	0.7	0.7	0.7	0.7	0.7
24 household electric appliances	0.8	1.0	1.4	1.3	1.3	1.3	1.3	1.3
25 other electric machinery	1.5	3.0	4.0	5.4	5.8	5.8	6.0	6.2
26 automobile	3.5	4.1	4.6	4.1	4.0	4.0	3.9	3.8
27 shipping	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.2
28 other transport machinery	0.6	0.5	0.4	0.4	0.4	0.4	0.4	0.4
29 machine of precision	0.5	0.6	0.6	0.4	0.4	0.4	0.4	0.4
30 other manufacturing	2.3	2.7	2.8	2.3	2.3	2.2	2.1	2.0
31 civil engineering & construction	11.3	9.4	10.5	10.0	10.1	10.0	9.8	9.7
32 electricity	1.5	1.6	1.6	1.7	1.8	1.8	1.8	1.8
33 gas & heet supplies	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
34 water & avandonment disposition	0.6	0.6	0.5	0.5	0.5	0.5	0.5	0.5
35 wholesale	4.8	4.6	5.6	5.9	5.8	5.8	5.8	5.9
36 retail	4.5	4.3	3.9	3.6	3.7	3.6	3.6	3.6
37 finance	2.0	2.5	3.4	3.2	2.9	2.9	3.0	3.0
38 insurance	0.7	0.9	1.0	0.8	0.7	0.7	0.7	0.7
39 real estate	6.1	6.3	6.0	6.8	6.9	6.8	6.8	6.9
40 land transportation	2.9	2.8	2.6	2.4	2.4	2.4	2.4	2.4
41 water transportation	0.7	0.6	0.6	0.5	0.5	0.4	0.4	0.4
42 flight transportation	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
43 other transportation	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3

44 telecommunication	0.6	0.8	0.8	1.2	1.4	1.4	1.4	1.4
45 post	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
46 education	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
47 research	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
48 medical care & hygiene	1.9	2.0	1.5	1.7	1.7	1.7	1.8	1.8
49 other public services	0.4	0.4	0.1	0.1	0.1	0.1	0.1	0.1
50 advertisement	0.8	0.7	0.7	0.6	0.6	0.6	0.6	0.6
51 lease	0.1	0.2	0.6	0.8	0.9	1.0	1.0	1.0
52 other business service	2.0	2.7	3.2	4.3	4.6	4.6	4.7	4.7
53 recreation	1.3	1.6	1.8	1.7	1.7	1.8	1.8	1.8
54 broadcasting	0.4	0.3	0.3	0.3	0.3	0.3	0.3	0.3
55 restaurant	2.6	2.5	2.1	2.4	2.5	2.5	2.5	2.6
56 hotel	0.7	0.7	0.7	0.6	0.6	0.6	0.6	0.6
57 other personal service	0.9	1.1	1.0	1.1	1.1	1.1	1.1	1.1
58 package & no classified item	1.4	1.1	0.8	0.9	0.9	0.9	0.9	0.8
59 goverment	6.2	6.0	5.4	5.6	5.6	5.6	5.6	5.7
60 non-profit activity	1.6	1.6	1.5	1.6	1.6	1.7	1.7	1.7
61 total intermediate input	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

retes of growth%	1985/ 1980	1990/ 1985	1995/ 1990	1996/ 1995	1998/ 1996	2000/ 1998	2002/ 2000
1 agriculture, forest & fisheries	-1.8	-4.5	-3.5	-4.1	-0.4	-1.0	-0.9
2 mining	-8.3	-3.3	-5.6	0.5	-15.5	-10.5	-12.7
3 food	1.7	-4.4	0.0	-4.8	0.0	-0.3	-0.2
4 drinks	1.7	-0.9	-0.9	-2.7	-1.5	-0.5	-0.4
5 tobacco	-2.2	-7.4	-1.0	-3.5	0.1	-1.4	-2.1
6 fiber & spinnig	-2.1	-8.0	-8.9	-18.6	3.5	-3.1	-3.5
7 textile & fiber product	-4.4	-5.1	-5.7	-9.4	-2.0	-3.3	-3.6
8 sawing & furniture	-4.6	-1.6	-3.8	-1.8	-1.9	-1.5	-1.6
9 pulps & paper	-0.8	-1.5	-2.2	-2.7	-1.3	-0.3	-0.2
10 printing & publication	0.6	1.2	-1.7	0.0	-0.1	0.3	0.4
11 gum product	-1.6	0.3	-2.1	-2.3	-1.7	-1.0	-1.1
12 basic chemicals	0.5	-1.3	-1.3	0.5	-0.7	-0.1	-0.4
13 synthetic fiber	-9.3	-3.4	-3.5	-4.6	-0.3	-2.8	-2.9
14 other chemicals	5.8	1.8	1.0	-1.1	0.1	1.1	1.1
15 oil product	-5.2	-6.1	1.2	-3.1	-1.2	-1.3	-1.2
16 coal product	-6.1	-8.6	-6.4	14.4	-0.3	-0.9	-1.0
17 ceramics	-2.5	-1.7	-2.2	-1.5	-0.8	-0.7	-0.8
18 iron manufacture	-6.3	-7.4	1.1	-5.1	1.6	-1.0	-1.1
19 other iron & steel	-2.3	-4.0	-1.5	-1.1	1.6	-0.5	-0.7
20 non-ferrous metal	-1.3	-0.2	-1.1	-0.1	0.7	-0.4	-0.5
21 metal product	-1.5	1.4	-0.9	-1.4	0.9	-0.3	-0.4
22 general machinery	1.8	1.4	-3.2	1.7	0.5	0.6	0.4
23 industrial electric machinery	-0.3	2.4	-1.3	-1.6	1.4	1.0	0.8
24 household electric appliances	4.9	6.3	-0.6	-3.9	1.3	0.7	0.5
25 other electric machinery	15.0	6.0	6.0	6.5	0.8	1.5	1.4
26 automobile	3.3	2.7	-2.4	-1.6	-0.8	-0.8	-0.9
27 shipping	-1.2	-8.0	5.7	-15.9	6.8	-0.1	-0.3
28 other transport machinery	-2.8	-3.2	-2.1	-5.4	2.2	-0.5	-0.7
29 machine of precision	1.3	-0.8	-4.3	-2.9	-1.6	-1.5	-1.8
30 other manufacturing	3.5	0.3	-3.3	-3.3	-1.7	-1.8	-2.0
31 civil engineering & construction	-3.6	2.2	-1.1	1.2	-0.7	-0.6	-0.8
32 electricity	0.6	0.0	2.1	1.0	0.2	0.2	0.3
33 gas & heet supplies	0.2	0.9	2.6	2.3	-0.4	-0.3	0.1
34 water & avandonment disposition	0.0	-4.0	-0.2	0.7	0.0	0.1	0.2
35 wholesale	-0.7	4.0	1.0	-2.2	0.1	0.1	0.1
36 retail	-0.7	-2.1	-1.2	0.9	-0.6	-0.7	-0.5
37 finance	4.9	5.8	-1.3	-9.2	1.1	0.4	0.4
38 insurance	3.6	3.2	-5.1	-7.9	-0.1	-0.2	-0.1
39 real estate	0.5	-1.0	2.6	1.4	-0.3	0.1	0.4
40 land transportation	-0.4	-1.5	-1.5	-1.1	-0.3	-0.2	-0.1
41 water transportation	-4.8	-0.7	-2.4	-6.3	-8.8	-1.7	-1.9
42 flight transportation	0.6	4.3	-0.2	3.7	1.2	0.7	0.8
43 other transportation	-2.2	1.0	-0.3	-0.6	0.1	0.1	0.1
44 telecommunication	5.2	1.2	7.1	17.2	1.2	0.9	1.1

45 post	-3.5	0.5	0.0	0.3	0.0	-0.4	-0.3
46 education	1.0	-2.0	1.1	-1.0	0.8	0.7	0.9
47 research	4.8	0.9	-0.1	-0.9	0.5	0.6	0.5
48 medical care & hygiene	0.5	-4.9	2.0	-1.5	0.9	1.3	1.5
49 other public services	1.7	-20.8	-1.9	-0.9	0.3	0.3	0.2
50 advertisement	-3.6	0.0	-3.4	2.0	-0.4	-0.4	-0.3
51 lease	11.4	20.9	6.8	13.6	2.6	1.4	1.2
52 other business service	6.0	3.6	5.7	6.4	0.7	0.6	0.5
53 recreation	4.3	2.4	-0.5	-0.2	1.2	0.9	0.8
54 broadcasting	-4.1	-1.7	0.0	1.4	-0.2	-0.1	0.1
55 restaurant	-1.2	-3.0	2.2	4.2	0.6	0.7	0.7
56 hotel	-0.6	-0.9	-1.6	0.7	-2.3	-0.1	-0.1
57 other personal service	3.3	-1.4	1.1	0.5	0.9	0.6	0.9
58 package & no classified item	-4.2	-5.6	1.5	-0.7	-1.4	-0.9	-0.9
59 goverment	-0.6	-2.1	0.9	-0.8	0.2	0.2	0.3
60 non-profit activity	-0.5	-0.4	1.1	0.7	0.9	0.7	0.8

final demands (1990=100) unit: million yen rate of growth%

final demands	1980	1985	1990	1995	1996
1 goverment consumption	30215992	34202434	38806563	43546063	44213883
2 household consumption	171973475	200043914	246170556	270394667	278651234
3 net increase in inventories	1290773	2003565	2483478	884116	1132199
4 capital formation public	26452920	23582146	28279359	40630289	43528794
5 capital formation private	57264107	69092242	110337709	98996286	109441035
6 export	29431012	40792721	46908626	58357979	59241851
7 total final demand	316628279	369717022	472986291	512809400	536208996
8 import	-24215244	-26114200	-43073125	-54708829	-59344700
9 total domestic expenditure	292413035	343602822	429913166	458100571	476864296

final demands	1998	2000	2002	1985/ 1980
1 goverment consumption	45460538	46742343	48155130	2.5
2 household consumption	287639408	296333309	305289983	3.1
3 net increase in inventories	1152670	1171186	1187640	9.2
4 capital formation public	45376200	47209398	49020492	-2.3
5 capital formation private	113639303	117767137	121805254	3.8
6 export	62849680	66547818	70326669	6.7
7 total final demand	556117799	575771191	595785168	3.1
8 import	-64195129	-70121209	-76579614	1.5
9 total domestic expenditure	491922670	505649982	519205554	3.3

rates of growth %	1990/ 1985	1996/ 1990	1996/ 1995	1998/ 1996	2000/ 1998	2002/ 2000	2002/ 1996
1 goverment consumption	2.6	2.3	1.5	1.4	1.4	1.5	1.4
2 household consumption	4.2	1.9	3.1	1.6	1.5	1.5	1.5
3 net increase in inventories	4.4	-18.7	28.1	0.9	0.8	0.7	0.8
4 capital formation public	3.7	7.5	7.1	2.1	2.0	1.9	2.0
5 capital formation private	9.8	-2.1	10.6	1.9	1.8	1.7	1.8
6 export	2.8	4.5	1.5	3.0	2.9	2.8	2.9
7 total final demand	5.0	1.6	4.6	1.8	1.8	1.7	1.8
8 import	10.5	4.9	8.5	4.0	4.5	4.5	4.3
9 total domestic expenditure	4.6	1.3	4.1	1.6	1.4	1.3	1.4

composition ratio of total domestic production:% (177 sectors) rates of growth:%

ratio of composition%	1980	1985	1990	1995	1998	2000	2005	2010	1985/1980
1 cereals	0.5	0.5	0.4	0.4	0.4	0.4	0.3	0.3	0.0
2 potatos & puls	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	-0.1
3 vegetables	0.5	0.4	0.3	0.3	0.3	0.3	0.3	0.3	-2.9
4 fruits	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	-4.1
5 other crops for food	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-2.2
6 non-edible crops	0.2	0.2	0.1	0.2	0.2	0.2	0.2	0.2	-2.6
7 live-stock industry	0.5	0.5	0.4	0.4	0.4	0.4	0.5	0.5	-0.9
8 sericulture	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-9.4
9 agricultural service	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	-3.9
10 forestry	0.1	0.1	0.1	0.0	0.0	0.0	0.1	0.1	-0.9
11 sawing	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	-2.9
12 special forest product	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-1.2
13 sea fisheries	0.4	0.3	0.3	0.2	0.2	0.2	0.3	0.3	-0.9
14 domestic internal fisheries	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-5.1
15 iron ore	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-9.6
16 non-ferrous metal mineral	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-2.3
17 materials for ceramics	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-6.0
18 grabel & rubble	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	-9.0
19 other non-ferrous mineral	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.2
20 coal & fignite	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-6.5
21 crude oil	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.2
22 natural gas	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-3.0
23 butchery	0.3	0.3	0.2	0.2	0.2	0.2	0.3	0.3	1.6
24 live-stock food	0.4	0.4	0.3	0.3	0.3	0.3	0.4	0.4	1.8
25 manne product for food	0.7	0.8	0.6	0.6	0.5	0.5	0.6	0.6	1.5
26 cereal polishing & milling	0.8	0.7	0.5	0.6	0.6	0.6	0.5	0.5	-2.5
27 noodles, bread & confections	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	-2.1
28 agricultural preservation food	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	-4.1
29 sugar, oil& flavoring	0.4	0.4	0.3	0.3	0.3	0.3	0.3	0.3	-1.2
30 other food	0.5	0.5	0.5	0.5	0.5	0.5	0.4	0.4	-0.6
31 spirits	0.6	0.5	0.5	0.4	0.4	0.4	0.5	0.4	-2.4
32 other drinks	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.2
33 feed & organic fertilizer	0.2	0.2	0.1	0.1	0.1	0.1	0.2	0.2	1.7
34 tobacco	0.5	0.4	0.3	0.3	0.3	0.3	0.3	0.3	-3.3
35 spinning & cotton spinning	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	-4.9
36 textile	0.6	0.4	0.3	0.2	0.2	0.2	0.3	0.3	-7.6
37 knitting	0.2	0.2	0.2	0.1	0.1	0.1	0.2	0.2	-2.2
38 dyeing	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	-2.0
39 other textile articles	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	-1.6
40 apparel	0.7	0.7	0.6	0.4	0.4	0.4	0.6	0.6	-0.9
41 other apparel	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-1.5
42 other ready-made article	0.2	0.2	0.2	0.1	0.1	0.1	0.2	0.2	1.4
43 sawing plywood & chips	0.6	0.5	0.4	0.3	0.3	0.3	0.4	0.4	-6.9

ratio of composition%	1980	1985	1990	1995	1998	2000	2005	2010	1985/1980
44 other wood product	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	-4.7
45 furniture & equipage	0.6	0.5	0.5	0.4	0.4	0.4	0.5	0.4	-3.5
46 pulps	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	-3.3
47 foreign & Japanese paper	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	-0.9
48 other paper	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	-0.7
49 paper container	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.0
50 other paper processed goods	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	2.7
51 publication & printing	1.3	1.3	1.4	1.3	1.3	1.2	1.2	1.2	0.4
52 chemical fertlizer	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	-6.8
53 alkali manufacture product	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	-3.5
54 other basic inorganic product	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	-3.0
55 basic petrochemical procuct	0.2	0.2	0.2	0.3	0.3	0.3	0.3	0.3	-1.6
56 intermediate organic product	0.4	0.4	0.4	0.5	0.5	0.5	0.5	0.5	-1.6
57 other basic organic articles	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	1.1
58 synthetic resins	0.3	0.4	0.4	0.4	0.4	0.4	0.4	0.4	2.8
59 synthetic fiber	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	-1.8
60 medical supplies	0.3	0.5	0.7	0.8	0.7	0.7	0.5	0.5	9.5
61 scap & surface activator	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	2.4
62 painting & printing ink	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	-0.6
63 sensitizer materials	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	7.0
64 agricultural medicines	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	-5.1
65 other final chemicals	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	10.9
66 oil products	1.4	1.2	1.1	1.3	1.3	1.3	1.1	1.1	-3.9
67 coal products	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.2	-1.9
68 plastics	0.9	1.1	1.2	1.2	1.2	1.2	1.2	1.2	4.0
69 gum products	0.3	0.3	0.4	0.1	0.1	0.1	0.1	0.1	1.7
70 gum & plastic articles	0.1	0.1	0.0	0.3	0.3	0.3	0.2	0.3	-5.8
71 leather footwears	0.1	0.1	0.1	0.0	0.0	0.0	0.1	0.1	-3.5
72 leather & fur	0.1	0.1	0.1	0.1	0.0	0.0	0.1	0.1	-3.5
73 glass	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	-2.1
74 other glass products	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1	3.3
75 cement	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	-7.0
76 concrete	0.3	0.3	0.3	0.2	0.2	0.2	0.2	0.2	-4.9
77 cement product	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	-6.2
78 ceramic ware	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	-1.5
79 other ceramics	0.4	0.3	0.3	0.2	0.2	0.2	0.3	0.3	-6.0
80 iron & steel	1.2	1.0	0.8	0.7	0.7	0.7	0.8	0.8	-4.4
81 hot rolled steel materials	1.2	0.9	0.9	0.8	0.8	0.8	0.8	0.8	-5.5
82 steel tube	0.2	0.2	0.2	0.1	0.1	0.1	0.2	0.2	-5.4
83 cold rolled & gilding	0.7	0.7	0.6	0.6	0.6	0.6	0.6	0.6	-0.8
84 casting & forging steel product	0.4	0.3	0.3	0.2	0.2	0.2	0.2	0.2	-4.8
85 other steel product	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.0
86 non-ferrous refining	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	-1.9
87 electric wire & cable	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	-2.3
88 other non-ferrous metal	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	-1.6

ratio of composition%	1980	1985	1990	1995	1998	2000	2005	2010	1985/1980
89 metal product for contruction	0.5	0.4	0.4	0.4	0.4	0.4	0.4	0.4	-4.6
90 metal product for building	0.4	0.3	0.4	0.4	0.4	0.4	0.4	0.4	-4.6
91 other metal product	1.2	1.1	1.1	1.1	1.1	1.1	1.1	1.1	-0.8
92 motor & boiler	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	4.2
93 carriage machinery	0.2	0.2	0.2	0.1	0.1	0.1	0.2	0.2	0.1
94 freezer thermostat & humidity regulator	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	11.1
95 other general industrial machinery	0.5	0.6	0.6	0.5	0.5	0.5	0.6	0.6	1.6
96 mine & civil engineering machinery	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	-1.8
97 chemical machinery	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	-5.3
98 metal transformation machine-tool	0.3	0.4	0.4	0.3	0.3	0.3	0.3	0.3	4.9
99 other special industrial machinery	0.5	0.5	0.6	0.5	0.5	0.5	0.5	0.5	0.0
100 other general machinery	0.5	0.6	0.6	0.4	0.4	0.4	0.5	0.5	4.4
101 office machinery	0.1	0.2	0.3	0.3	0.3	0.3	0.3	0.3	20.4
102 machinery for service	0.1	0.1	0.1	0.2	0.2	0.2	0.1	0.1	7.1
103 household electric appliances	0.8	1.0	1.0	1.4	1.4	1.4	1.1	1.1	4.7
104 computer & its subsidiary instrument	0.1	0.4	1.0	1.1	1.1	1.1	0.9	0.9	32.5
105 telecommunication instrument	0.5	0.8	1.2	0.6	0.6	0.6	0.5	0.5	11.0
106 electronic application apparatus	0.1	0.3	0.6	0.3	0.3	0.3	0.5	0.5	31.6
107 electric measuring apparatus	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	6.3
108 semi-conductor element	0.1	0.2	0.4	0.6	0.6	0.6	0.5	0.5	27.9
109 other electronic telecommunication	0.0	0.1	0.1	1.1	1.5	1.8	1.5	1.6	12.0
110 heavy electric machinery	0.6	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.6
111 other electric apparatus	0.5	0.5	0.7	0.7	0.7	0.7	0.7	0.7	2.8
112 automobile	2.6	3.3	4.0	1.6	1.6	1.6	2.3	2.3	4.6
113 motor cycle	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	-8.5
114 internal combustion engine for car	0.5	0.5	0.6	2.5	2.8	3.0	3.3	3.4	1.8
115 ship & her repair	0.4	0.4	0.2	0.2	0.2	0.2	0.2	0.2	-3.2
116 railway vehicle & its repair	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	-7.3
117 air craft & its repair	0.1	0.1	0.1	0.1	0.1	0.0	0.1	0.1	14.9
118 other transport machinery	0.2	0.2	0.2	0.1	0.1	0.1	0.2	0.2	0.0
119 optical machinery	0.2	0.2	0.2	0.1	0.1	0.1	0.2	0.2	-0.5
120 clock & watch	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	-3.1
121 other machines of precision	0.2	0.3	0.3	0.2	0.2	0.2	0.3	0.3	4.9
122 toys & sport goods	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	4.3
123 other manufacturing	0.5	0.5	0.5	0.4	0.4	0.4	0.5	0.5	0.2
124 residences building	3.3	2.6	3.1	2.7	2.7	2.7	2.6	2.6	-4.5
125 non-residence construction	2.7	2.5	2.9	1.8	1.8	1.8	2.7	2.7	-1.7
126 construction & its repair	0.8	0.9	0.8	1.0	1.0	1.0	1.0	1.0	1.0
127 public works	2.2	2.0	2.3	3.0	2.9	2.9	3.1	3.1	-1.6
128 other civil engineering & construction	1.5	1.3	1.3	1.4	1.4	1.4	1.2	1.2	-3.3
129 electricity	1.6	1.5	1.6	1.8	1.8	1.7	1.6	1.6	-1.2
130 gas supplies	0.2	0.2	0.2	0.3	0.3	0.3	0.2	0.2	2.2
131 heet supplies	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.2
132 water service	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	2.9
133 abandonmetn disposition	0.4	0.4	0.3	0.3	0.3	0.3	0.3	0.3	1.0

ratio of composition%	1980	1985	1990	1995	1998	2000	2005	2010	1985/1980
134 wholesale	6.7	6.8	5.7	6.2	6.1	6.1	5.1	5.1	0.3
135 retail	4.3	3.9	3.9	3.7	3.7	3.6	3.8	3.8	-1.8
136 finance	2.1	2.1	2.5	2.2	2.2	2.1	2.0	2.0	-0.2
137 insurance	0.7	1.0	1.1	0.9	0.9	0.9	1.2	1.2	7.6
138 real estate mediation & its lease	1.5	1.6	1.3	1.2	1.2	1.2	1.2	1.2	0.9
139 housing rent	4.8	4.5	4.5	4.9	4.9	4.8	4.6	4.6	-1.0
140 railway passenger trafic	0.8	0.7	0.7	0.7	0.7	0.6	0.6	0.6	-2.5
141 railway cargo trafic	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-13.4
142 road passenger trafic	0.8	0.7	0.5	0.4	0.4	0.4	0.5	0.5	-3.9
143 road cargo trafic	0.9	1.0	1.1	1.2	1.2	1.2	1.1	1.1	1.9
144 open sea transprt	0.5	0.5	0.3	0.3	0.3	0.3	0.3	0.3	-2.9
145 coast inner water transport	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	-4.6
146 harbor transport	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	-2.6
147 air craft transport	0.2	0.2	0.3	0.3	0.3	0.3	0.3	0.3	1.8
148 warehouse	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.7
149 package	0.2	0.3	0.2	0.2	0.2	0.2	0.2	0.2	2.9
150 other transport subsidiary service	0.4	0.5	0.5	0.5	0.5	0.5	0.5	0.5	1.2
151 post	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	-0.9
152 telecommunication	0.6	0.8	0.8	1.2	1.2	1.2	0.9	0.9	5.8
153 other telecommunication	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.5
154 broadcasting	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	-0.1
155 public service (central)	1.0	1.0	0.8	0.9	0.8	0.8	0.8	0.8	0.0
156 public service (local)	1.9	1.8	1.6	1.8	1.8	1.8	1.7	1.7	-1.4
157 school education	2.1	2.1	1.9	2.2	2.2	2.2	2.1	2.1	-0.3
158 social education	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.5
159 science research institutions	0.1	0.2	0.2	0.1	0.1	0.1	0.1	0.1	1.4
160 R & D within firms	0.5	0.8	1.0	1.0	1.0	1.0	1.0	1.0	8.7
161 medical care	2.3	2.8	2.6	2.9	2.8	2.8	2.7	2.7	3.8
162 hygiene	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	-0.3
163 social security	0.4	0.4	0.4	0.5	0.5	0.5	0.4	0.4	-1.9
164 other public services	0.7	0.8	0.5	0.5	0.5	0.5	0.4	0.4	0.9
165 advertisement	0.5	0.5	0.7	0.6	0.6	0.6	0.6	0.6	2.4
166 investigation & information service	0.3	0.7	0.8	1.0	1.0	1.0	1.0	1.0	17.6
167 lease	0.6	0.8	1.0	1.2	1.3	1.3	1.2	1.2	4.9
168 automobile-lease	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	10.9
169 automobile repair	1.0	0.8	0.7	0.7	0.7	0.7	0.6	0.6	-3.9
170 machine repair	0.5	0.6	0.8	0.8	0.8	0.8	0.8	0.8	3.9
171 other services for business	1.6	1.8	2.1	2.3	2.3	2.3	2.1	2.1	2.1
172 recration services	1.2	1.5	1.8	1.9	1.8	1.7	1.7	1.7	4.6
173 restaurant	2.6	2.4	2.1	1.9	1.9	1.7	2.0	2.0	-1.1
174 hotel & others	0.8	0.8	0.7	0.6	0.6	0.6	0.6	0.6	-0.7
175 other services for person	0.9	1.0	1.0	1.0	1.0	1.0	1.1	1.0	3.2
176 office article	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	4.7
177 no-classification	1.3	1.1	0.7	0.7	0.7	0.7	0.6	0.6	-3.1
178 total intermediate input	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	0.0

rates of growth %	1990/ 1988	1995/ 1990	1998/ 1995	2000/ 1998	2005/ 2000	2010/ 2005	2010/ 1995
1 cereals	-6.3	-0.9	-0.8	-0.9	-1.9	-0.1	-1.0
2 potatos & puls	-5.4	-6.4	-1.2	-1.3	-1.1	-0.2	-0.8
3 vegetables	-4.5	-1.4	-0.5	-0.6	1.7	-0.1	0.4
4 fruits	-6.9	-4.4	-0.6	-0.7	3.6	-0.1	0.9
5 other crops for food	-5.1	1.0	0.1	0.1	5.2	-0.1	1.7
6 non-edible crops	-3.9	1.1	-0.3	-0.3	-0.1	0.0	-0.2
7 live-stock industry	-2.2	-1.7	-0.3	-0.3	4.1	-0.1	1.2
8 sericulture	-15.7	-26.8	-2.0	-2.1	12.4	-0.3	3.2
9 agricultural service	-3.0	-2.8	-0.6	-0.7	1.9	-0.1	0.4
10 forestry	-5.2	-11.9	0.1	0.0	13.3	-0.2	4.2
11 sawing	-6.3	-5.4	0.5	0.4	12.0	-0.1	4.0
12 special forest product	-1.0	2.7	-0.2	-0.3	-0.5	0.0	-0.3
13 sea fisheries	-3.0	-5.0	-0.6	-0.6	4.3	-0.1	1.2
14 domestic internal fisheries	-2.8	-4.7	-0.4	-0.5	5.5	-0.1	1.6
15 iron ore	-39.6	-7.4	0.0	-0.1	4.6	0.1	1.5
16 non-ferrous metal mineral	-15.2	-6.2	0.2	0.4	-0.1	0.1	0.1
17 materials for ceramics	-2.3	-0.8	0.0	0.0	-0.3	0.0	-0.1
18 grabel & rubble	0.6	-2.6	-0.7	-0.9	0.4	-0.2	-0.2
19 other non-ferrous mineral	-5.3	-2.1	0.3	0.2	3.1	0.3	1.2
20 coal & fignite	-18.1	-5.9	-0.3	-0.4	3.6	0.0	1.0
21 crude oil	-4.2	7.1	-1.3	-1.4	-16.7	-0.2	-6.4
22 natural gas	-6.1	-1.1	-1.0	-1.0	-6.8	0.0	-2.7
23 butchery	-4.8	-1.5	-0.1	-0.1	6.6	-0.1	2.1
24 live-stock food	-2.5	0.0	-0.4	-0.5	0.7	-0.1	0.1
25 manne product for food	-5.3	-1.5	-0.4	-0.5	2.8	-0.1	0.8
26 cereal polishing & milling	-5.4	2.6	-0.4	-0.5	-1.5	-0.1	-0.7
27 noodles, bread & confections	0.5	-0.2	-0.5	-0.5	0.8	-0.1	0.1
28 agricultural preservation food	-6.2	-3.7	-0.5	-0.5	4.4	-0.1	1.3
29 sugar, oil & flavoring	-2.8	-0.2	-0.5	-0.6	-0.5	-0.1	-0.4
30 other food	1.1	0.1	-0.6	-0.7	-1.3	-0.1	-0.7
31 spirits	-1.3	-2.0	-0.5	-0.6	1.4	-0.1	0.2
32 other drinks	0.0	-0.6	-0.5	-0.5	0.9	-0.1	0.1
33 feed & organic fertilizer	-2.8	-0.7	-0.2	-0.2	3.7	0.0	1.1
34 tobacco	-7.2	-0.1	-0.5	-0.5	0.8	-0.1	0.1
35 spinning & cotton spinning	-8.3	-10.8	-0.5	-0.6	7.3	0.0	2.2
36 textile	-6.7	-7.6	-0.3	-0.4	6.5	0.0	2.0
37 knitting	-3.8	-4.7	-0.4	-0.5	5.8	-0.1	1.7
38 dyeing	-5.7	-7.0	-0.4	-0.5	5.7	0.0	1.7
39 other textile articles	-1.1	1.7	-0.2	-0.3	-2.2	0.0	-0.8
40 apparel	-0.6	-8.3	-0.5	-0.6	8.6	-0.1	2.6
41 other apparel	-5.7	-6.2	-0.4	-0.5	6.2	0.0	1.9
42 other ready-made article	0.7	-6.5	-0.5	-0.6	5.5	-0.1	1.6
43 sawing plywood & chips	-2.9	-5.3	0.1	0.0	7.3	-0.2	2.3
44 other wood product	-2.1	1.3	0.3	0.2	1.0	-0.1	0.4
45 furniture & equipage	-0.2	-4.4	-0.4	-0.5	2.3	-0.2	0.6

	1990/1988	1995/1990	1998/1995	2000/1998	2005/2000	2010/2005	2010/1995
	rates of growth %						
46 pulps	-0.3	-0.9	-0.2	-0.3	-0.4	0.0	-0.2
47 foreign & Japanese paper	2.8	0.6	-0.1	-0.1	-0.2	0.0	-0.1
48 other paper	-0.1	-1.0	-0.1	-0.1	0.5	0.0	0.1
49 paper container	-2.0	-1.9	-0.4	-0.4	-0.1	0.0	-0.2
50 other paper processed goods	-0.6	-3.2	-0.5	-0.5	0.7	-0.1	0.0
51 publication & printing	1.2	-1.4	-0.5	-0.5	-1.0	0.0	-0.5
52 chemical fertilizer	-6.5	-3.1	-0.6	-0.6	0.7	-0.1	0.0
53 alkali manufacture product	-0.8	-0.5	0.1	0.1	0.1	0.1	0.1
54 other basic inorganic product	-0.7	0.2	0.3	0.3	0.6	0.1	0.3
55 basic petrochemical product	2.1	3.4	0.4	0.4	-2.7	0.2	-0.7
56 intermediate organic product	0.2	2.9	0.6	0.5	-1.4	0.2	-0.2
57 other basic organic articles	-1.5	-0.3	0.3	0.3	0.1	0.2	0.2
58 synthetic resins	1.7	1.7	0.3	0.3	-1.3	0.2	-0.3
59 synthetic fiber	-4.6	-0.6	0.2	0.1	2.9	0.2	1.1
60 medical supplies	6.8	2.6	-0.8	-0.8	-6.1	0.0	-2.3
61 soap & surface activator	-2.3	3.1	-0.3	-0.4	-2.1	-0.1	-0.8
62 painting & printing ink	1.5	0.3	0.3	0.2	0.5	0.0	0.3
63 sensitizer materials	3.7	3.9	0.1	0.0	-2.6	0.2	-0.8
64 agricultural medicines	-7.6	-2.1	-0.4	-0.5	2.0	-0.1	0.5
65 other final chemicals	-0.2	-3.4	-0.2	-0.2	0.8	0.1	0.2
66 oil products	-2.0	4.3	-0.1	-0.2	-3.1	0.0	-1.1
67 coal products	-5.9	-2.4	-0.2	-0.3	0.4	0.0	0.0
68 plastics	2.0	-0.5	0.1	0.1	0.0	0.1	0.1
69 gum products	2.8	-21.3	-1.1	-1.2	8.1	0.1	2.3
70 gum & plastic articles	-5.6	41.2	4.4	4.5	-4.3	0.5	0.1
71 leather footwears	-0.5	-5.0	-0.5	-0.6	4.8	-0.1	1.4
72 leather & fur	-4.0	-8.8	-0.5	-0.6	8.1	-0.1	2.4
73 glass	-0.8	2.0	1.1	1.2	2.1	0.1	1.1
74 other glass products	-2.6	-4.9	-0.3	0.4	-1.9	0.2	-0.6
75 cement	-1.8	0.8	-0.3	-0.4	0.4	-0.2	0.0
76 concrete	0.1	-2.8	-0.6	-0.8	1.4	-0.2	0.2
77 cement product	0.1	-1.0	-0.5	-0.6	1.3	-0.2	0.2
78 ceramic ware	-0.9	-2.6	0.8	1.1	1.2	0.1	0.7
79 other ceramics	-0.7	-2.3	-0.1	-0.2	1.4	-0.1	0.4
80 iron & steel	-2.5	-2.9	0.1	0.0	0.7	0.1	0.3
81 hot rolled steel materials	-1.6	-2.1	0.2	0.1	1.6	0.1	0.6
82 steel tube	-2.0	-4.5	0.0	-0.1	3.7	0.1	1.3
83 cold rolled & gilding	-0.5	-1.9	0.3	0.2	0.8	0.1	0.4
84 casting & forging steel product	-2.0	-4.0	0.3	0.2	1.0	0.0	0.4
85 other steel product	1.4	-3.6	0.1	0.1	1.1	0.0	0.4
86 non-ferrous refining	3.0	0.2	0.9	1.1	-0.9	0.3	0.1
87 electric wire & cable	-2.2	-3.8	0.3	0.4	0.0	0.1	0.2
88 other non-ferrous metal	-1.4	-0.3	0.9	1.1	-0.5	0.1	0.2
89 metal product for construction	3.1	-2.1	-0.2	-0.3	2.9	-0.1	0.8
90 metal product for building	3.4	-1.0	0.1	0.0	2.7	-0.1	0.9

rates of growth %	1990/ 1988	1995/ 1990	1998/ 1995	2000/ 1998	2005/ 2000	2010/ 2005	2010/ 1995
91 other metal product	0.2	-1.4	0.0	0.0	0.6	0.0	0.2
92 motar & boiler	-3.2	2.2	0.0	-0.2	-3.7	0.0	-1.3
93 carriage machinery	0.5	-7.1	-0.3	-0.4	4.2	-0.1	1.2
94 freezer thermostat & humidity regulator	3.4	-0.7	-0.1	-0.2	-0.1	0.0	-0.1
95 other general industrial machinery	2.0	-2.7	0.0	-0.1	0.9	0.0	0.3
96 mine & civil engineering machinery	1.6	-4.5	-0.2	-0.3	1.4	0.0	0.4
97 chemical machinery	-2.5	-0.1	-0.2	-0.3	-1.6	0.0	-0.6
98 metal transformation machine-tool	0.7	-6.5	-0.1	-0.3	2.2	0.0	0.7
99 other special industrial machinery	0.8	-3.0	0.0	-0.2	0.2	0.1	0.0
100 other general machinery	-0.2	-7.3	-0.1	-0.2	3.4	0.0	1.1
101 office machinery	7.7	-4.3	-0.1	-0.3	1.6	0.1	0.5
102 machinery for service	9.9	5.4	-0.2	-0.3	-6.5	-0.1	-2.3
103 household electric appliances	1.3	6.1	-0.1	-0.2	-4.7	0.1	-1.6
104 computer & its subsidiary instrument	17.5	3.0	0.0	-0.2	-4.4	0.1	-1.5
105 telecommunication instrument	8.0	-11.4	-0.4	-0.5	-4.0	0.1	-1.5
106 electronic application apparatus	12.1	-13.7	-0.4	-0.6	12.7	0.1	3.9
107 electric measuring apparatus	0.1	-1.8	0.0	-0.2	-0.1	0.0	-0.1
108 semi-conductor element	13.7	5.9	0.7	0.7	-4.8	0.4	-1.3
109 other electronic telecommunication	2.1	63.3	9.7	11.3	-4.4	1.3	2.2
110 heavy electric machinery	2.1	-0.8	-0.1	-0.3	-1.1	0.0	-0.4
111 other electric apparatus	5.5	-0.3	0.7	0.7	-0.1	0.3	0.3
112 automobile	3.9	-16.7	-0.1	-0.2	7.3	0.2	2.4
113 motor cycle	-10.0	-0.2	0.2	0.0	0.5	0.3	0.3
114 internal combustion engine for car	2.6	34.4	3.5	3.4	2.2	0.5	2.0
115 ship & her repair	-7.7	0.2	0.2	0.0	-1.2	0.2	-0.3
116 railway vehicle & its repair	-6.8	-5.1	-0.5	-0.6	1.5	-0.2	0.2
117 air craft & its repair	-5.6	-10.6	-0.7	-0.8	6.4	-0.1	1.8
118 other transport machinery	0.6	-5.5	-0.2	-0.3	4.1	0.0	1.3
119 optical machinery	-0.4	-7.8	0.2	0.0	6.6	0.2	2.3
120 clock & watch	-3.3	-7.7	0.0	-0.1	8.5	0.2	2.8
121 other machines of precision	1.2	-2.9	-0.1	-0.3	1.5	0.0	0.4
122 toys & sport goods	-0.3	0.9	-0.3	-0.4	-0.5	0.0	-0.3
123 other manufacturing	0.6	-4.1	-0.4	-0.5	3.1	0.0	0.9
124 residence building	3.2	-2.2	-0.3	-0.4	-0.6	-0.2	-0.4
125 non-residence construction	3.0	-8.7	-0.3	-0.4	8.2	-0.2	2.5
126 construction & its repair	-1.8	5.2	0.2	0.2	-0.5	0.0	-0.1
127 public works	2.3	5.4	-0.3	-0.4	1.5	-0.1	0.3
128 other civil engineering & construction	0.6	1.7	-0.3	-0.4	-2.3	-0.2	-1.0
129 electricity	0.8	2.3	-0.2	-0.1	-2.2	0.0	-0.8
130 gas supplies	0.6	6.0	-0.2	-0.2	-3.4	-0.1	-1.2
131 heat supplies	2.9	16.0	1.2	1.1	-0.8	0.1	0.2
132 water service	0.2	1.2	-0.3	-0.4	-0.5	-0.1	-0.3
133 abandonment disposition	-4.4	-1.0	-0.4	-0.5	1.1	-0.2	0.1
134 wholesale	-3.6	1.8	-0.3	-0.4	-3.6	-0.1	-1.3
135 retail	0.0	-0.9	-0.5	-0.5	1.2	-0.1	0.2

rates of growth %	1990/ 1988	1995/ 1990	1998/ 1995	2000/ 1998	2005/ 2000	2010/ 2005	2010/ 1995
136 finance	3.8	-2.7	-0.6	-0.6	-1.0	0.0	-0.5
137 insurance	1.5	-4.1	-0.2	-0.2	6.3	0.0	2.0
138 real estate mediation & its lease	-3.9	-1.4	-0.4	-0.4	-0.5	-0.1	-0.3
139 housing rent	-0.2	1.8	-0.5	-0.5	-0.9	-0.1	-0.5
140 railway passenger trafic	-1.4	0.2	-0.4	-0.4	-0.8	-0.1	-0.4
141 reilway cargo trafic	-1.4	0.6	-0.2	-0.2	-0.3	-0.1	-0.2
142 road passenger trafic	-3.9	-3.9	-0.5	-0.6	2.8	-0.1	0.7
143 road cargo trafic	2.4	1.1	-0.2	-0.2	-0.5	0.0	-0.2
144 open sea transport	-11.2	0.9	0.5	0.3	-0.1	0.5	0.3
145 coast inner water transport	-1.4	-0.1	-0.2	-0.3	-0.2	-0.1	-0.2
146 harbor transport	-2.0	-0.8	0.1	0.0	-0.1	0.3	0.1
147 air craft transport	4.4	3.0	-0.2	-0.3	-2.5	0.1	-0.9
148 warehouse	0.6	0.0	-0.2	-0.2	-0.4	0.0	-0.2
149 package	-8.7	1.7	-0.1	-0.1	-2.2	0.0	-0.8
150 other transport subsidiary service	0.1	2.1	-0.3	-0.4	-2.6	0.0	-1.0
151 post	0.7	0.2	-0.4	-0.4	-0.8	-0.1	-0.4
152 telecommunication	1.2	8.3	-0.2	-0.3	-5.7	0.0	-2.0
153 other telecommunication	8.2	-15.7	-2.1	-2.2	2.4	-0.1	0.0
154 broadcasting	0.7	2.4	-0.2	-0.2	-1.5	0.0	-0.6
155 public service (central)	-5.6	2.7	-0.4	-0.5	-0.4	-0.3	-0.4
156 public service (local)	-2.1	2.7	-0.4	-0.5	-0.6	-0.3	-0.4
157 school education	-1.6	2.6	-0.4	-0.5	-0.7	-0.2	-0.4
158 social education	0.3	1.0	-0.3	-0.4	0.2	-0.2	-0.1
159 science reseach institution	-0.3	-0.3	-0.3	-0.3	0.1	-0.1	-0.1
160 R & D within firms	4.0	-0.2	0.4	0.5	-0.6	0.2	0.0
161 medical care	-1.2	1.8	-0.5	-0.5	-0.9	-0.1	-0.5
162 hygiene	-4.0	5.3	-0.3	-0.5	-3.2	-0.2	-1.3
163 social security	0.8	4.3	-0.4	-0.5	-2.6	-0.2	-1.1
164 other public services	-9.7	1.6	-0.5	-0.5	-1.8	-0.1	-0.8
165 advertisement	4.2	-1.8	-0.4	-0.4	-0.6	0.0	-0.4
166 investigation & information service	4.0	3.5	0.1	0.1	-0.6	0.2	-0.1
167 lease	5.2	5.0	0.3	0.3	-0.6	0.1	-0.1
168 automobile-lease	14.1	5.5	0.1	0.1	-0.2	0.2	0.0
169 automobile repair	-4.2	1.8	-0.5	-0.5	-2.4	-0.1	-1.0
170 machine repair	3.8	0.8	0.0	0.0	-0.3	0.1	-0.1
171 other services for business	2.8	2.3	-0.2	-0.2	-1.7	0.0	-0.6
172 recration services	2.7	1.1	-0.5	-0.5	-0.9	-0.1	-0.5
173 restaurant	-2.7	-2.2	-0.4	-0.6	2.0	-0.1	0.4
174 hotel & others	-2.8	-3.0	-0.4	-0.5	3.1	-0.1	0.8
175 other services for person	0.4	-0.2	-0.5	-0.5	1.0	0.0	0.2
176 office article	-1.3	-2.1	-0.4	-0.4	-0.3	0.0	-0.2
177 no-classification	-9.0	-0.3	-0.2	-0.2	-1.8	0.0	-0.7

final demands	1980	1985	1990	1995	1998
1 consumption out of household	12808664	15315615	17548240	16750837	17671761
2 private consumption	167948000	198592426	246911076	273494077	287680738
3 general goverment consumption	29569055	33393339	38302061	45905693	48429488
4 total domestic fixed capital public	26026863	24544819	31712615	47354457	50105270
5 total domestic fixed capital private	57792599	68545817	107014385	96636047	102249621
6 net increase in inventories	1998435	1993438	2620159	749169	781077
7 export	33099810	44803343	47881754	51108356	55360912
8 total final demand	329243426	387188797	491990290	531998635	562278867

final demands	2000	2005	2005	1985/ 1980
1 consumption out of household	18277708	19982997	21740293	3.6
2 private consumption	298130453	327549741	358109754	3.4
3 general goverment consumption	50188641	54602207	59112420	2.5
4 total domestic fixed capital public	52027358	56881451	62188425	-1.2
5 total domestic fixed caputal private	106172019	116077746	126285571	3.5
6 net increase in inventories	801517	850776	898610	-0.1
7 export	58277103	65935193	74236428	6.2
8 total final demand	583874799	641880111	702571501	3.3

rates of growth %	1990/ 1985	1995/ 1990	1998/ 1995	2000/ 1998	2005/ 2000	2010/ 2005	2010/ 1995
1 consumption out of household	2.8	-0.9	1.8	1.7	1.8	1.7	1.8
2 private consumption	4.5	2.1	1.7	1.8	1.9	1.8	1.8
3 general goverment consumption	2.8	3.7	1.8	1.8	1.7	1.6	1.7
4 total domestic fixed capital public	5.3	8.3	1.9	1.9	1.8	1.8	1.8
5 total domestic fixed capital private	9.3	-2.0	1.9	1.9	1.8	1.7	1.8
6 net increase in inventories	5.6	-22.2	1.4	1.3	1.2	1.1	1.2
7 export	1.3	1.3	2.7	2.6	2.5	2.4	2.5
8 total final demand	4.9	1.6	1.9	1.9	1.9	1.8	1.9

4 Conclusion

We are obliged to write this paper by the openning of the serious depression spiral processes from the fourth quarter 1997. According to the detailed examinations of actual data, we have concluded that the too strict analysises by only theoretical models, or, by merely large-scale econometric models [9] have not been enough to explain the actual depression spiral processes which had given rise to continuous negative rates of growth in japan's real GDP during three quarters[10], or rather three years. In spite of the meaningful suggestions given by the model by P. Artus, we have tried to represent some scenatios of final demands[11] and to show the forecast for 2002 and the forecast for 2010 of the industrial structures of our economy[12]. Of course, we have utilized some econometric models[13] which consist of about 380 and 100 econometric estimated equations to predict the scenarios of final demands. However, in order to explain actual depression spiral processes, we have ventured to change various estimated parameters personally and have obtained the scenarios of final demands[14].

Therefore, the scenarios of final demands are not strictly based on the economic models, but they are delibrately elaborated by personal intuitions and experiences of my economic research. In view of too much rapidly changing economies, both Japanese and foreign, the results of economic analysises accumulated for a long time are not too sufficient to represent actual abruptly changing world[15].

This is the reason why we have constructed the scenarios of final demands by taking into consideration, historical factors, political factors, psychological factor of the general public and normal economic factors [16], instead of utilizing strict theoretical and econometric models[17].

Note

(1) P. Artus, op. cit., pp. 86–98

(2) The Oriental Economist Publishing, "The Exchange rates & the rates of interest", CD-ROM for Window 95, 1998

(3) I. Nakatani, op. cit., 1996, R. Komiya and others, op. cit., 1997

(4) The Oriental Economist Publishing, "Economate-W, year version, 1997, quarterly version, summer 1998.

(5) The Oriental Economist Publishing, "Economate I-O:Win 95 version, 1998, data, Economic Planning Agency version, 1998

(6) The Oriental Economist Publishing, "Economate I-O: Win 95 version, 1998, data, General Affairs Agency version, 1998

(7) I. Nakatani, op.cit.,1996, R. Komiya and others, op. cit., 1997

(8) The Oriental Economist Publishing, "Economate-W, year version 1997, quarterly version, summer 1998, Economate I-O: win 95, 1998." Nikkei Data, Needs Economy 1998.

Needs World, 1998.

(9) Nikkei Data, Needs Economy 1998. Needs World, 1998, Needs I-O, 1998, JPFR85NP86, JPFR85@86&43, 1998, and other models. Manual, needs, 1998.

(10) Nihon Keizai Newspaper, September 13, 29, 1998

(11) The Oriental Economist Publishing, Economate-W, 1998, Nikkei data, Needs I-O, 1998. Manual, Needs, 1998

(12) The Oriental Economist Publishing, "Economate I-O: win 95 1998.

(13) The Oriental Economist Publishing, "Economate-W, versions, 1997, 1998. Nikkei Data, Needs-World, 1998, Needs Economy, 1998, Needs I-O, 1998. Manual, Needs, 1998

(14) I. Nakatani, op. cit., 1996

(15) Nihon Keizai Newspaper, August, September, 1998

(16) I. Nakatani, op. cit., 1996. R.Komiya and others, op. cit., 1997. Nikkei Data, Manual, Needs, 1998

(17) R. I. Mckinnon and K. Ohno, op. cit., 1998. E. Sakakibara, op. cit., 1995.